Empirical investigation of the impact of Foreign Direct Investment on manufacturing firms and banks in Nigeria

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Declaration

Whilst registered as candidate for the Degree of Philosophy, I have not been registered for any other research award. The results and conclusions embodied in this thesis are my work and have not been submitted for any other academic award.

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Abstract

This thesis is based on the econometric investigation of the impact of Foreign Direct Investment on Nigerian manufacturing firms and banks. Unique data obtained from a survey of Nigerian firms conducted by the Centre for the Study of African Economies, University of Oxford, and United Nations Industrial Development Organization was employed for the estimations based on manufacturing firms. For the investigation based on Nigerian banks, this study uses the BankScope data base. Ordinary Least Squares and Fixed Effects techniques were used to estimate the coefficients of foreign presence measures in augmented Cobb-Douglas models for manufacturing firm data, and augmented Dealership models for data on banks. Results of the estimations show evidence of positive effects of foreign presence on domestic manufacturing firms, while no effects were obtained from the estimations based bank data.

The differences in FDI effects reflect on the sector-specific characteristics of manufacturing firms and banks in Nigeria. Manufacturing firms in Nigeria operate at low technology levels and are open to foreign direct investment, while the opposite seems to be case of banks in the country. The results therefore support earlier thoughts in literature on FDI which assert that positive spillovers exist were technology gaps between foreign firms and domestic firms exist, or in sectors open to FDI.

Important contributions were made in examining the effect of the approaches taken towards the measurement of foreign presence on spillover estimates with particular reference to sampling procedure and data quality. The study therefore concludes that FDI generates spillovers in Nigerian manufacturing firms but attention of empirical investigations should focus on appropriate measurement of foreign presence variables, and the specific characteristics of the sector or industry being examined.

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Chapter 1 Introduction

1.1 Introduction

The impact of Foreign Direct Investment (henceforth FDI) on host countries has been a contentious area of research in the fields of economics, international business and politics. In economics and international business research, investigation of FDI effects in an economy are undertaken using two major approaches. One is the macro approach which involves the empirical investigation of FDI effects on economic growth, trade, real wages or employment. And the other is the micro approach which relates measures of FDI or foreign presence on smaller economic units such as firms or plants. However, in both macro and micro investigations, there is a considerable level of debate and contrasting views. Starting from macro investigations, some studies argue that FDI can augment domestic capital accumulation and thus enhance economic growth (Slywester, 2005). Similarly some show that FDI can fuel domestic investment by raising the investment ratio above the domestic savings ratio (Thirlwall, 2006). On the other hand, some studies contend that FDI can crowd out domestic investment and create distortions within the economic which deter GDP growth (Chase-Dunn, 1975). In the same line of thought, Saltz (1992) argue that FDI can raise the price of capital and thereby depress investment.

Similar debates are also evident on micro level analysis of FDI impact which typically involves empirical investigation of FDI impact on the productivity or performance of firms, using disaggregated data obtained from industrial surveys or census. The fundamental argument on the micro level is that new investment from overseas can stimulate (positive spillover) or deter (negative spillover) existing domestic firms to greater or lesser productivity. Empirical literature in an attempt to establish a standpoint on the debate on the direction and extent of the effects has been rather extensive. The focus of micro level investigation of FDI effects has been on manufacturing industry which seems to be due to the applicability of production function models to the sector. However, micro-analysis of FDI effects can also be applied to the banking sector, despite the limited empirical studies based on the sector. In both sectors, there is a lack of consensus on the direction and extent of FDI impact in the sector. In studies based on manufacturing sector, evidence from Globerman (1979), Kokko et al. (2000), Girma and Wakeline (2000), and Yasar and Paul (2007) show positive effects on domestic productivity, while Aitken and Harrison (1999), Lopez-Cordova (2002) and Lileeva (2010) report negative FDI effects. Similarly, in banking sector studies, Claessens (2001) and

Unite and Sullivan (2003) find negative association of foreign presence on profits, while Lensink and Hermes (2004) found positive association on the same. Thus the lack of consensus in FDI spillover analysis has been cited as the major motivation for researchers to venture into this area of research.

Despite the abundance of literature on FDI spillover analysis, very few of them are based on African economies. Anyanwale and Bamire (2004), Bwalya (2006), Managi and Bwalya (2010), and Waldkirch and Ofosu (2010) seem to be the only empirical studies based on African countries. This is quite surprising considering the fact that FDI inflows to Africa rose by 28% in 1998, 39% in 2003, and 78% in 2005 (UNCTAD-WIR, 1998, 2003, 2005). However, the dearth of literature is likely to be connected with the fact that disaggregated data at the firm or plant level are hardly available in a form that permits rigorous econometric analysis which FDI spillover research requires. Datasets obtained through surveys conducted by international organisation such as World Bank and United Nations have contributed considerably towards making data available for statistical studies on Africa. Surveys such as Regional Program on Enterprise Development (RPED) carried out by the World Bank, and African manufacturing Enterprise Surveys (AMES) conducted by Centre for the Study of African Economies (CSAE) of the University of Oxford and United Nations Industrial Development Programme (UNIDO) provide alternative solutions for the shortcomings of data availability on African firms.

The Nigerian Manufacturing firm surveys (NMES) provided by CSAE and UNIDO therefore provide an opportunity for the investigation of FDI spillover effects as it contains relevant information for the estimation of spillovers. The opportunity to investigate FDI spillovers in Nigeria is particularly important as the country has been one of the top five destinations for FDI in Africa for about three decades mainly due to its position as the continent's largest oil producer. Nigeria is also an interesting case due to the dynamics of its operating environment which involves a complex interplay of economic, political, and institutional factors that potentially affect most economic variables, including FDI.

The present study therefore provides a novel attempt to investigate the impact of FDI on both manufacturing firms and banks in Nigeria. The choice of the two sectors is mainly partly due to data availability and the fact their data permit the application of established productivity or performance models are used in FDI or foreign presence modelling. Also this study conducts econometric analyses using a unique data obtained from CSAE-UNIDO surveys, which provide an avenue to depict the effects that alternative measures of foreign presence have on spillover estimates. As far as I am aware, no study has provided either a comprehensive study on FDI effects on Nigerian manufacturing banks or firms, or detailed examination of the implications of the approach(s)

undertaken in the computation of foreign presence measures on estimates of productivity or performance.

Despite the relevance or significance of sector such as Energy and telecommunications, this study is restricted to the manufacturing and banking sectors for the following reasons. First is the availability of disaggregated firm level panel data in the manufacturing and banking sectors of Nigeria, suitable for rigorous investigation. Investigating FDI spillover effects requires disaggregated data on determinants of a chosen measure of output, as well as foreign equity participation on each firm in the sample. Thus most empirical studies rely on extensive surveys and commercial databases as their source of information. In the case of Nigeria, despite the relevance of the energy and telecommunications industry, there is insufficient disaggregated panel firm level data required for FDI spillover analysis. Obtaining such data would require conducting surveys as the available institutions do not compile the data in a manner the permits FDI spillover analysis.

Secondly, a key requirement of data employed or FDI spillover investigation is that considerable number foreign and domestic firms exist in the sample. However, in the case of Nigeria Energy and telecommunications sectors, domestic firms are rather negligible, as foreign firms largely dominate the sectors. Thus applying the standard models such as Cobb-Douglas production function and Dealership models could lead to misleading results. In general, the rationale behind the choice of restricting the investigation to manufacturing and telecommunications sectors is data driven.

The restriction of this investigation to the manufacturing and banking sectors implies that generalization of the impact of FDI on productivity/performance in Nigerian sectors based on the results of this thesis would be limited. Thus the results of the analysis are limited to the two sectors which have considerable level of FDI, as the leading FDI recipient sectors were excluded from the study. The Energy sector, particularly the oil sector, has attracted some of the biggest MNCs in the world since the discovery of oil in Nigeria. Thus the dynamics of FDI in the oil sector, with considerable foreign presence for the decades, are bound to be different from that of manufacturing and banking sectors. Similarly, the telecommunications sector in Nigeria which has witness huge flows of FDI since the inception of mobile telecommunications in 2001. The sector has emerged as the fastest growing telecommunications market in the world (Ndukwe, 2005). In general, this study is limited in scope as it focuses on sectors with considerable levels of FDI in Nigeria, and not the leading sectors.

The two sectors in focus in this study have important linkages as banks are known to complement the manufacturing industry by providing adequate financial capital. The role of banks in economic development dates back to the work of Schumpeter (1911), where banks play an important role in financial intermediation which benefits the economy. Banks allocate scare financial resources (savings) to entrepreneurs who are deemed to be capable of providing sufficient returns. King and Levin (1993) pointed out that the level of financial intermediation is directly related to the rate of economic growth. In general theoretical models by different scholars have shown the linkage between efficiency of financial institutions and economic growth (Pagano, 1993, Greenwood and Jovanovic, 1990; Levine, 1991, Bencivenga and Smith, 1991; Saint-Paul, 1992, show the theoretical constructs for the relationship between financial institutions and economic growth).

Within an economy, empirical evidence has shown that industries with more access to external financing have higher growth rates (Rajan and Zingales, 1998). Banks provide financial resources to various forms of industries. In particular, the manufacturing industry is often dependent on banks for much of its finance. Galindo and Micco (2004) show evidence of the reliance of manufacturing firms on external funding through banks. In Japan, manufacturing firms and financial institutions have very strong relationships. The major automobile manufacturing firms also do most of their borrowing from group financial institutions. For example the Mitsubishi manufacturing dies most of its financial transactions with Mitsubishi Bank, which comprises the Mitsubishi group with other subsidiaries (Hoshi et al., 1990).

In Nigeria there are also strong links between the manufacturing and banking sectors. In an effort to stimulate the manufacturing industry through the provision of financial and management expertise to small and medium scale industries, the Central Bank of Nigeria in 2001 mandated all Nigerian banks to set aside 10% of their profits after tax for equity investment in small and medium enterprises, with considerable emphasis on the manufacturing sector (CBN, 2009). This directive was know as the Small and Medium Enterprises Equity Investment Scheme, and it provided strong links between banks and manufacturing firms in Nigeria. Thus the linkage of these two sectors is also a reason for restricting the investigation the sectors.

1.2 What is foreign direct Investment?

As FDI is the central theme in this study, it is worthwhile to throw light into its meaning and the trends over time. Foreign Direct Investment (FDI) has continued to be relevant in both the economic and political scenes. It is regarded as an instrument of international economic integration (UNCTAD-WIR, 2008). Over time, the growth of world FDI flows has well exceeded that of world gross domestic product (GDP), exports and domestic investment (UNCTAD, 2008). Despite the growing relevance of FDI, its meaning still remains unclear to many scholars. A common misconception is that foreign direct investment (FDI) in a country is merely the investment that emanates from a foreign country. Thus FDI is erroneously assumed to measure all cross-border investment. But the definition on FDI is narrower than that of cross border investment, as the later comprises both foreign direct investment and foreign portfolio investment. As a result of this mismatch, it is worthwhile to ask the fundamental question: What is FDI?

OECD *Benchmark definition of foreign direct investment* (fourth edition) defines direct investment as "*a category of cross-border investment made by a resident in one economy (the direct investor) with the objective of establishing a lasting interest in an enterprise (the direct investment enterprise) that is resident in an economy other than that of the direct investor*". The ownership of at least 10% of the equity or voting power by the direct investor is a necessary condition for an investment to be qualified as a direct investment (OECD, 2008; pp.10).

To elaborate on this definition, we attempt to throw light on some of the key words or phrases that make up this definition. The first is "a category of cross-border investment". This implies that FDI is one of other categories of cross-border investment such as portfolio investment. The second is "made by a resident in one economy (direct enterprise)".This means that direct investor must be an enterprise whose parent or head office is in a foreign country. For example, General Motors Corporation has its parent office in the United States of America. The third phrase is "with the objective of". The purpose or motivation of the investment is essential in distinguishing direct investment from other categories of investment. The objectives of the direct investor should be clearly stated. The disclosure of its objectives is the necessary information required to enable the categorization of the activity of the direct enterprise.

The fourth phase is the most crucial one: "establishing a lasting interest in an enterprise (direct investment enterprise)". The "lasting interest" implies that for the investment to be characterised as 'direct', the direct investor must possess a significant degree of influence or control in the

management of the enterprise. The evidence of this lasting interest is shown by the ownership of at least 10% of the equity or voting power of the enterprise .And lastly, “that is resident in an economy other than that of the direct investor”. This implies that the residence of the direct investment enterprise must be different from that of the direct investor. Thus a direct investor like General Motors Corporation in the U.S could establish a lasting interest in a direct investment enterprise in Japan. The direct investment enterprise could be a branch, in which the direct investor owns 100% of the enterprise; a subsidiary, in which the direct investor owns more than 50% of the equity or voting power; or an associate, in which the direct investor holds between 10% and 50% of the voting power (OECD, 2008). Subsidiaries and associates are incorporated while branches are unincorporated.

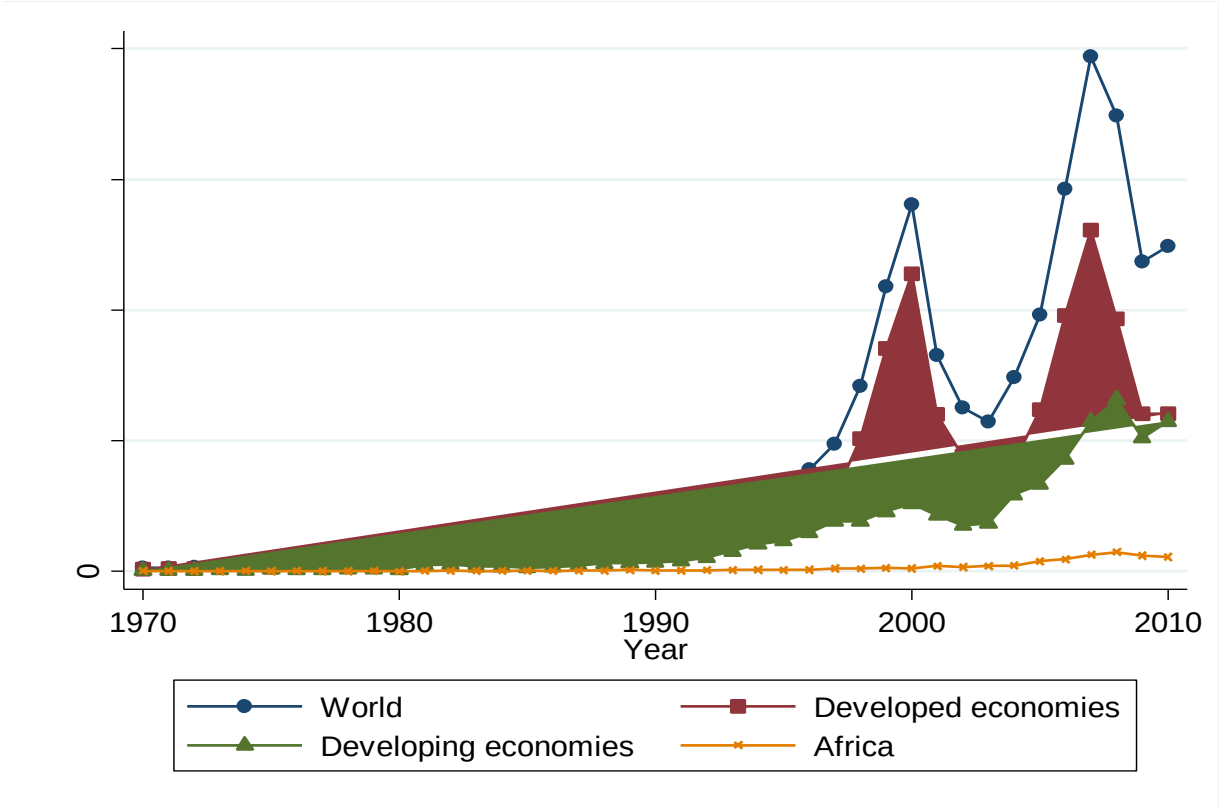
FDI could be in various modes. The notable modes include: Greenfield investment, which occurs when a firm sets up a new operation in a foreign country; Brownfield investment involves expansion or reinvestment in already existing foreign affiliates; Mergers and Acquisitions (M&A); Privatisation and equity investment; Joint ventures and Strategic alliances, etc. Another way of classifying FDI is according to its forms, namely: horizontal and vertical FDI. In simple terms, Horizontal FDI involves extending the production of the goods produced in the parent company to a foreign country. On the other hand, vertical FDI involves shifting stages of production to a foreign country.

Most FDI Statistics of different countries are recorded by the following international organisations: United Nations Conference on Trade and Development (UNCTAD), Organisation for Economic Co-operation and Development (OECD), World Bank, and International Monetary Fund (IMF). An OECD publication*, Benchmark Definition of Foreign Direct Investment*, sets the world standard for compiling direct investment statistics (OECD, 2008). This standard is in accordance with the IMF *Balance of Payments and International Investment Position Manual (BPM)*. The major aim of the guidelines is to facilitate international comparisons. On the other hand, UNCTAD focuses on the research, policy analysis, and data collection of both trade and foreign direct investment.

FDI statistics comprises of three standard components (IMF-OECD, 2003; OECD, 2008). The first is direct investment position, made up of equity capital and reinvested earnings. Another component is direct investment financial flows, which comprises equity capital, reinvested earnings, and other capital such as inter-company debt transactions. The third component is direct investment income, made up of income on equity, reinvested earnings and undistributed branch profits, and income on debt (interest).

The major undertakers of FDI are Multinational/transnational corporations (MNC/TNC). The activities of TNCs are becoming more relevant in the global economy. The top ten TNCs contribute about one percent of the world GDP. Despite these facts about MNCs, it should be noted that MNCs are not the only carriers of FDI. FDI can occur without any MNC, as it simply involves the control of an enterprise in a country by citizens of another country (Caves, 1971). This suggests that ownership of equity is the central requirement for FDI. But Caves (1971) pointed out that most direct investments involve a foreign corporate parent, and not merely foreign individuals.

Figure 1.1 FDI inflows: World and country groups 1970-2010



Source: UNCTAD/TNC database (www.unctad.org/fdistatistics)

1.3 Trends in FDI flows

FDI flows typically indicate how the structure of international production changes over time (UNCTAD-WIR, 1995). Figure 1.1 indicates that global flows of FDI have been quite cyclical. These cycles are deemed to be affected by cyclical fluctuations in GDP with a lag (UNCTAD-WIR, 1992). Thus global FDI flows have been experiencing periods of rising flows and declines with varying magnitudes. We therefore highlight the regional and sectoral characteristics of FDI flows

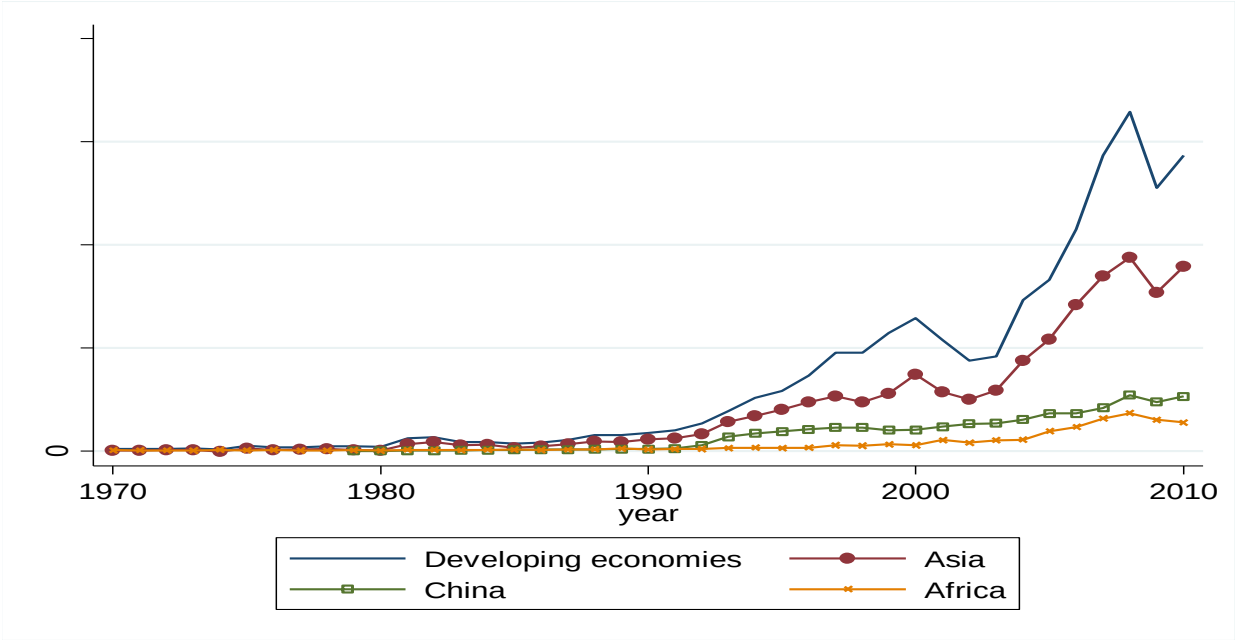
1.3.1 Regional

An important point which can be observed from Figure 1.1 is that developed countries are the main drivers of global FDI flows, as their plots are quite close to, and follow similar pattern. Notable periods of surges in global FDI include 1979-1981, 1986-1990, 1994-2000, and 2005-2007. The 1979-1981 boom was as a result of the second oil crises which favored oil-producing counties, making them a promising direction for FDI inflows. As a result, Saudi Arabia became the second largest recipient of FDI flows, following the Unites States (UNCTAD-WIR, 1997). The period 1986-1990 was characterized by the FDI liberalization wave, rapid growth in world GDP, and technological advances in information and telecommunication in developed countries (UNCTAD-WIR, 1997). Developing countries saw growth of 46% between 1985 and 1989, reaching $163 billion in 1989. Also the emergence of Japan as the largest outward investor contributed the late eighties boom. The next period of boom was between 1994 and 2000. Global inflows rose by 9% in 1994, a remarkable 40% in 1995, and 10% in 1996; exceeding the growth in nominal GDP and international trade (UNCTAD-WIR, 1997, 1997). 60% of these increases were all driven by developed countries, with the United States accounting for a quarter of global inflows (UNCTAD-WIR, 1997).

The surge in world FDI inflows continued in 1997 and 1998, despite the 2% decline in world economic growth in 1998 (UNCTAD-WIR, 1998, 1999). This was due to considerable growth the U.S. and the EU, and an upsurge in cross-border M&As in 1997 (UNCTAD-WIR, 1999). Also, falling costs of transportation and communication in developed countries spurred the further rise in inflows 1999 (UNCTAD-WIR, 2000).Significant rises in global FDI flows were also evident in the period 2005-2007. The rise could be attributed to rapid increases in both cross-border M&A and Greenfield investment and economic growth in many countries across the world (UNCTAD-WIR, 2007, 2008).

Despite the occurrence of FDI booms, there were also periods of significant declines in global FDI flows. The global recession in mid 1990s saw a decline in FDI inflows in 1990, 1991 and 1992 (UNCTAD-WIR, 1991, 1992, 1993). But an abrupt decline was the case in 2001, where global inflows remarkably fell by 51% after some strong growth in the latter half of the nineties. Economic downturn in developed countries and reduction in stock market participation were major causes of the decline (UNCTAD-WIR, 2002). This decline continued in 2002 and 2003, as FDI inflows fell by 20% and 18% respectively. During this period, inflows to developed countries halved, and the US accounted for about 90% of the decline. As a result, China, which was growing at alarming rate, became the second largest recipient of FDI after Luxembourg (UNCTAD-WIR, 2003). However, the economic climate in developed countries improved in 2005, but this was not sustained, as the global financial crises drove FDI increases into a decline in 2008, with inflows plunging by 14% (UNCTAD-WIR, 2005, 2009). The decline intensified in 2009, as new investments and cross-border M&As declined sharply; the financial conditions of MNCs deteriorated; and most economies were plunged into a recession (UNCTAD-WIR, 2010). The decline in global FDI inflows was essentially triggered by the developed countries but it had a contagion effect on host countries globally. It was not until 2010 that various economies started to recover from the recession, thus global FDI inflows began to rise modestly (UNCTAD-WIR, 2011).

Figure 1.2: FDI inflows: Developing countries 1970-2010



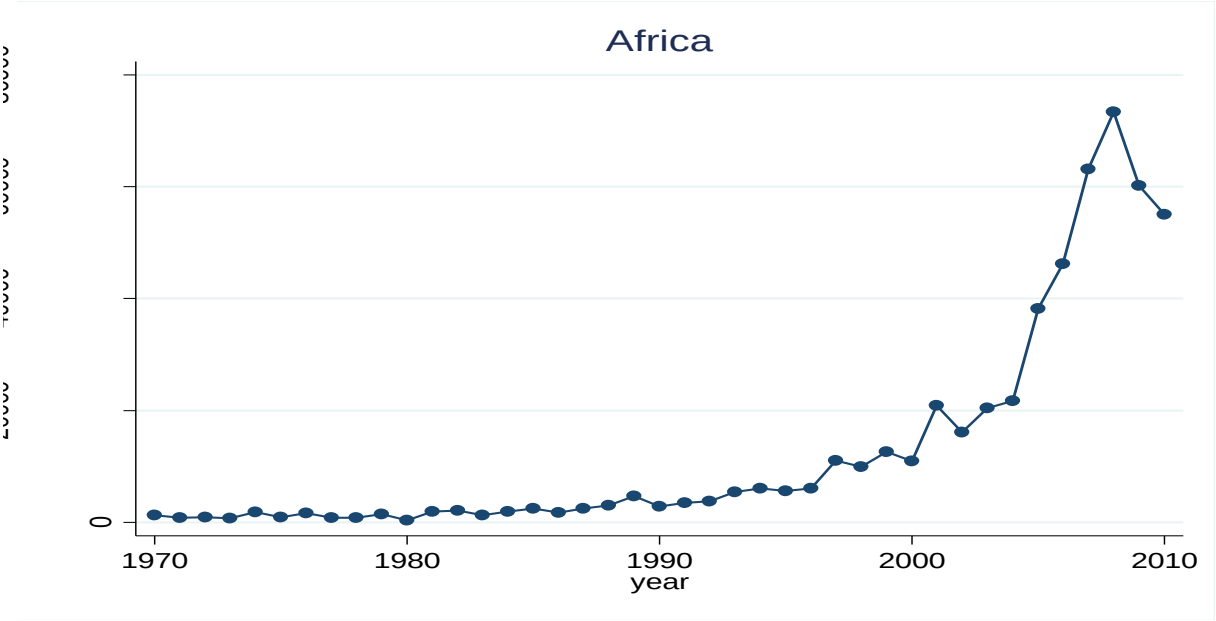
Source: UNCTAD/TNC database (www.unctad.org/fdistatistics)

Developing countries have significantly increased FDI inflows over time. Figure 1.2 shows a rather upward trend, which is quite clearer than the case of global flows and developed countries flows in Figure 1.1. Figure 1.2 shows no clear evidence of cyclicality, unlike Figure 1.1. The rapid growth of FDI inflows in developing countries in the mid eighties was driven mainly by Asian countries (UNCTAD-WIR, 1992). Despite the decline in global FDI flows in the early nineties, developing countries continued to grow significantly (UNCTAD-WIR, 1993). The upsurge in flows continued in 1992 and 1993, increasing five-fold between 1986 and 1993 (UNCTAD-WIR, 1993). South, East, and South-East Asia were the main drivers of the rapid growth, but of particular importance is the outstanding growth of China, which accounted for 55% of FDI inflows in developing countries, with a remarkable growth of 147% between 1992 and 1994 (UNCTAD-WIR, 1994). China became the highest FDI host country among developing countries (UNCTAD-WIR, 1996, 1997), with more FDI inflows than the African continent (53 countries).

The rapid growth in FDI flows to developing countries came to halt in 1998, decreasing by 1.5% (UNCTAD-WIR, 1997). The Asian region was particularly affected, as Japanese economy went into recession in 1997. FDI flows to Asian dropped by 9%, and China experienced a decline in inflows of 8% in 1999 (UNCTAD-WIR, 2000). Developing countries regained its FDI inflow growth in early 2000s, with a dramatic rise up till 2007. However, as expected, the financial crises led to another decline in FDI inflows in developing countries in 2008 (UNCTAD-WIR, 2009). This situation changed in 2010, as most countries, including developing countries started recovering from the recession, and FDI flows began rising, albeit modestly.

Africa has been undergoing a remarkable increase in FDI flows, but the rise has been an absolute rise rather than a relative one (Asiedu, 2002). In other words, the value of FDI flows has been increasing, but its share of global or developing countries FDI flows are declining. The decline in the region's share of global FDI can be linked to the decline in manufacturing sector due to structural obstacles (UNCTAD, 2008). Thus, Africa is still the region with the lowest share of FDI flows. However, as a result of the rapid economic growth in some regions/countries in Africa, both inward and outward FDI has been on the rise.

Figure 1.3a FDI Inflows: Africa



Source: UNCTAD/TNC database (www.unctad.org/fdistatistics)

An upward trend in inflows of FDI in Africa has remained since 1985. Among the various reasons for the rise in inflows, the most notable are: rising demand for natural resources (oil in particular); emergence of privatization schemes; increased developmental assistance by the international community, rise in commodity prices, etc. However, despite these developments, some key problems are still adamant in a majority of the countries in this region. Such problems which impede the FDI inflow include political instability, internal conflict[1], poor governance, and inadequate infrastructure. These problems are known to be "bad news" for foreign investors.

Developed countries are the main sources of FDI in African countries. As expected, due to colonial ties, the majority of FDI in the region originates from European Union countries (UNCTAD-WIR, 2008). United Kingdom, France, Portugal, Italy, and Germany are the leading investors from Europe, while United States is the leading investor from North America. In recent times, countries like Canada and Luxembourg have become notable investors in the continent. Although some MNCs withdrew their operations in the 90s, the prospect for FDI inflows from developed countries is still promising, as the MNCs have been returning gradually. As at 2006, the total number of MNCs was 6,400.

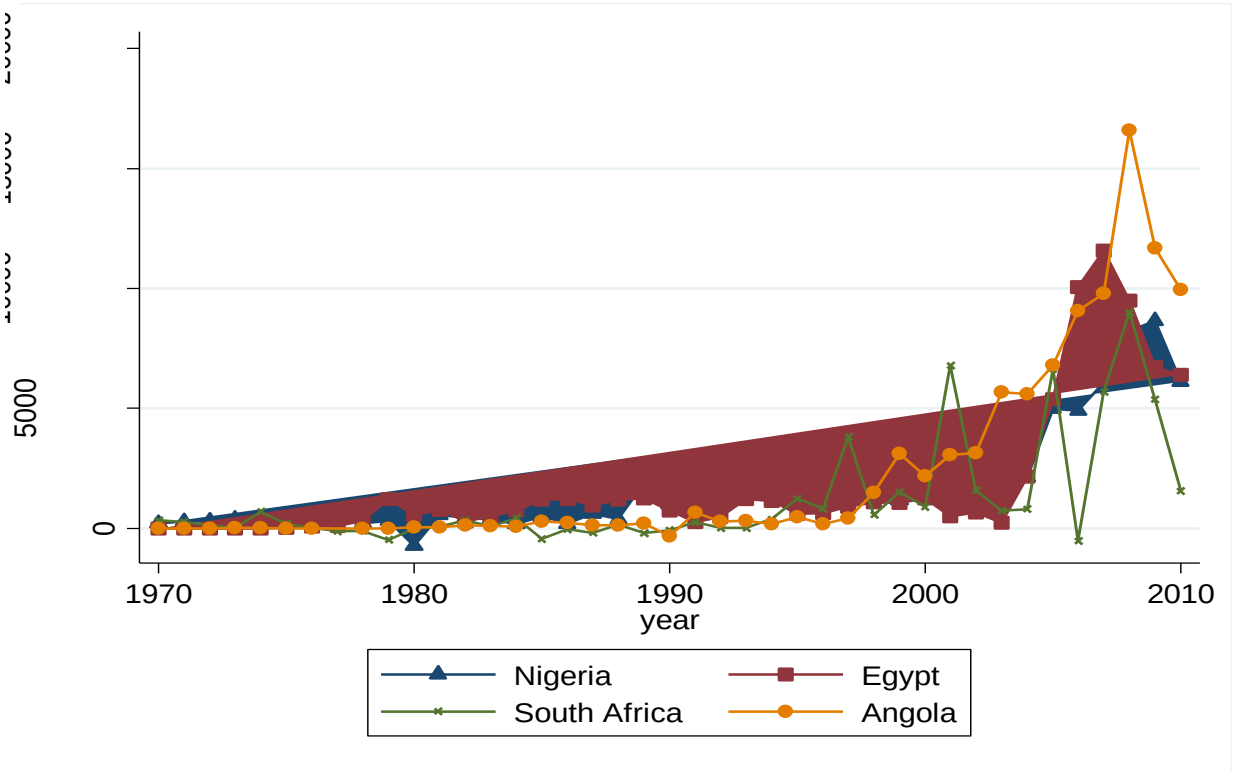
[1] Countries that were mired with conflicts in Africa include Chad, Liberia, Rwanda, Sierra Leone, Somalia, and Sudan (UNCTAD, 2008).

A notable recent development in Africa is the emergence of developing countries (which includes Africa) as sources of FDI. The FDI inflows from developing countries originate from mainly Asian countries: India, Malaysia, Republic of Korea, China, and Taiwan province of China (in descending order). However, South African TNCs have also emerged as sources of FDI especially in the services sector (UNCTAD, 2008).

FDI flows to Africa represent a typical case of location advantages, where the availability of natural resources directs the location of MNCs in the continent. Thus countries like Nigeria, Angola, and Egypt, which have abundant natural resources, particularly oil and gas are the top recipients of FDI in Africa (UNCTAD-WIR, 1995). Figure 1.3a shows that substantial growth in FDI inflows to Africa started in the mid 1990s. Prior to the 1990s, flows to Africa had lingered behind in both global and developing countries FDI flows. But Africa had its first taste of rapid growth in FDI flows in 1998, where inflows grew by 28%, ahead of the growth in other developing countries (UNCTAD-WIR, 2000). Considerable growth of 39% occurred in 2003, following a renewed rise in investment in natural resources (UNCTAD-WIR, 2004). But the most significant growth of the region was the remarkable 78% rise in FDI inflows which occurred in 2005 (UNCTAD-WIR, 2006). This dramatic upsurge was fuelled by high prices of minerals in the global market. Subsequent growth of 20% and 16% occurred in 2006 and 2007 respectively, as commodity prices continued to rise, and more African countries achieved a more FDI friendly environment (UNCTAD-WIR, 2007, 2008).

Contrary to expectations, FDI inflows to Africa rose in 2008, despite the global financial crises that reduced inflows across most regions in the world. This followed remarkable achievements in attracting FDI in Nigeria, Angola and South Africa, and increased investments in the manufacturing and services sectors of these countries (UNCTAD-WIR, 2009). However, at the turn of year 2010, FDI inflows in the continent started to plummet, as the contagion effects of the world financial crises started to set in (UNCTAD-WIR, 2010).

Figure 1.3b FDI inflows: Top FDI hosts in Africa



Source: UNCTAD/TNC database (www.unctad.org/fdistatistics)

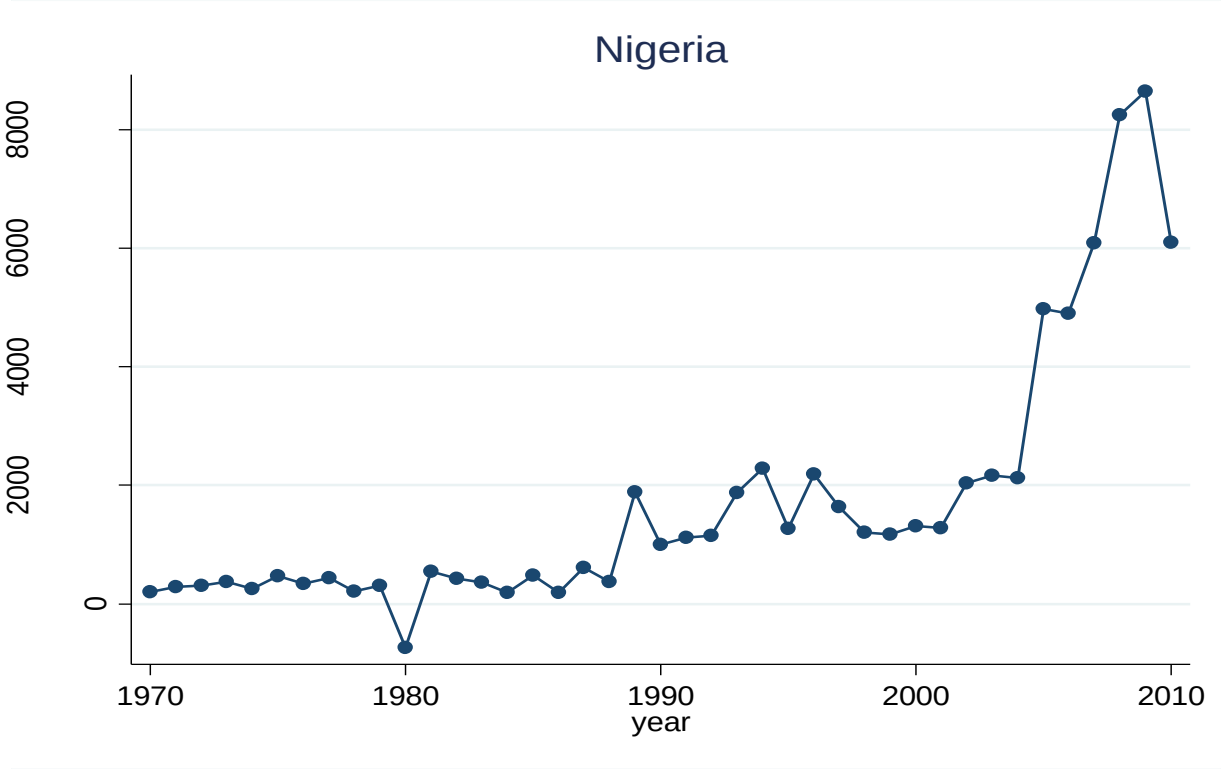
The distribution of FDI in Africa is uneven to a great extent. The unevenness is more prominent among countries than among sub-regions. In 2006, the distribution of FDI inward stock across sub-regions shows considerable variations. North Africa took the lead with a share of 37%; followed by Southern Africa's share of 33%; West Africa has a share of 20%; while Central Africa and East Africa lagged behind with single digit shares of 7% and 5% respectively (UNCTAD-WIR, 2007). In terms of inward flows the skewness increases further, as North Africa accounts for 66%; West Africa share stood at 19%; while Central Africa and East Africa shares were 11% and 5% respectively (UNCTAD-WIR, 2007).

The changes in the direction of FDI flows to African countries is also worthy of note. Figure 1.3b shows that Egypt dominated the most of the eighties, while Nigeria dominated the later part of the eighties and the first half of the nineties. As earlier indicated, the availability of natural resources, particularly oil was the major attraction of MNCs to the extractive industries of the said countries. But in that period (before the mid-nineties), FDI was not the major source of external resource inflow (only 12%) to the continent, as grants and official loans from developed countries and

international agencies constituted a large chunk of these flows (UNCTAD-WIR, 1995). FDI was not the desirable choice for MNCs, as the perception that operating conditions were unfavorable was the case. But as firm-level data began to show that MNC subsidiaries in African countries where highly profitable, the awareness of Africa as a promising destination began to rise (UNCTAD-WIR, 1995).

Angola is a particular country that has dramatically attracted FDI inflows of recent times. Inflows into Angola overtook Nigeria and Egypt in 1999 which had been the leading destination for many years (UNCTAD-WIR, 2000). This rise is attributed to the extensive direct investments and other financial assistance from China. Thus in 2008, Angola became the highest FDI recipient in Africa, ahead of Egypt, South Africa, and Nigeria.

Figure 1.4 FDI inflows: Nigeria, 1970-2010



Nigeria is the second largest host of FDI, and the largest oil producer in Africa. This is down from its position as the largest FDI recipient in the early nineties (UNCTAD-WIR, 1995). Hence the choice of focusing on FDI in Nigeria in this study is duly justified. From Figure 1.6, we can notice that FDI flows in Nigeria since the 70s have maintained an upward trend. In recent times, the inflows of FDI to Nigeria have grown to remarkable heights. In 2005, inflows had a 108% increase, from about $5

billion to $13 billion. This astronomical increase in FDI flows in Nigeria can be linked to the dramatic rise in FDI flows from emerging countries in Asia such as China, India, and Malaysia. Another reason is the rapid rise in crude oil prices, which increased investment in the petroleum extractive industries. Also, Nigeria is deemed to have been reaping the benefits of its turn to democracy, as the country seems to be achieving strong economic growth in recent times. FDI flows in Nigeria are quite concentrated, as the vast reserves of oil and gas attract MNCs into the extractive industries.

However, a combination of events and policies are likely to lead to significant declines in FDI flows to Nigeria. The first is the global economic crises which affected the MNCs across the globe. However, the recent recovery in 2010 is likely to overturn the decline as a result of the recession. But potential adverse effects are likely to come from the recent Petroleum Industry Bill passed by the Nigerian legislative arm. This bill would require a review of the tax exemptions previously granted to oil companies; increased government participation, and enforce local content directive for professional and management staff in oil companies (UNCTAD-WIR, 2011).

1.3 Sectoral trends

Since the 1950s to the mid eighties, world FDI had been focused on the primary sector – raw materials and resource based manufacturing (UNCTAD-WIR, 1991). At that time, MNCs were mostly of Anglo-Saxon origin, operating in the primary sectors of different developing countries (UNCTAD-WIR, 1993). In Africa, the majority of inward FDI stock has been in the primary sector, indicating that resource-seeking was the primary motive of FDI in the region. Of recent, South Africa, Nigeria, Botswana and Madagascar had majority (above 70%) of their FDI in the primary sector. The extractive industries in Africa have attracted majority of the FDI in the primary sector. As a result of the rise in demand for natural resources (especially oil) from emerging economies, increased liberalization of national markets, and soaring commodity prices, TNCs across the world increased operations in Africa. An obvious reason is because of the abundance of natural resources in African countries[2]. However, the United States which is the world's largest consumer of oil has plans of reducing its consumption of Middle East oil and increasing its exploration of oil in Africa (UNCTAD, 2008).

The emphasis on the primary sector began to change in the late 80s, as FDI flows into the services sector began to increase and flows to the primary sector fell. The fall in flows to the primary sector is connected to the growing pressure from host developing countries to reap more economic rents

[2] Countries like Nigeria, Algeria, Angola, Congo, Gabon, and Libyan Arab Jamahiriya are major oil producers in the continent (UNCTAD, 2008).

from natural resource exploration, which led to the nationalization and expropriation of some MNCs (Kennedy, 1992).Technological advancement and rising incomes in developed countries lead to the rise in FDI flows to the services sector from 25% of total FDI stock in the 70s to 50% in the late 80s, and 62% in 2006 (UNCTAD-WIR, 1991, 2008). Investment in financial services has been a significant driver of recent rise in flows to the services sector. In Africa countries with significant FDI inflows in financial services include Egypt, South Africa, Zambia, Uganda, and Mauritius.

The share of FDI flows to the manufacturing sector has been on a decline since the early 90s (UNCTAD-WIR, 2008). All manufacturing groups have been on the decline, but in the recent global financial crises, the Metals and metallic products sub-sector fell significantly (UNCTAD-WIR, 2010). In Africa, The share of inward FDI stock in the manufacturing sector between 1996 and 2006 fell from 40% to 27% (UNCTAD-WIR, 2007). The decline of flows to the manufacturing sector can be attributed to the high cost of production, which is as a result of poor infrastructure and insufficient human resource, among other reasons. However, the recent global recovery from the 2007 recession has seen the manufacturing sector grow by 23% (UNCTAD-WIR, 2011), following renewed emphasis of both developed and developing countries on the sector.

1.4 Research Questions

The basic enquires of this study are threefold:

Question 1: Are there spillover effects from FDI to domestic firms in Nigerian manufacturing firms?

Given the extensive literature on FDI spillovers in manufacturing firms, and the lack of consensus on the actual direction and extent of spillovers, unique data employed in this study will contribute to the debate by providing a comprehensive analysis on Nigerian manufacturing firms. This will contribute towards the attempts to arrive at a standpoint on FDI spillover investigation. The approach towards our investigation is to provide estimates of foreign presence measures using augmented Cobb-Douglas production functions

Question 2: Does foreign presence in Nigerian banking industry affect domestic bank performance?

How does the entry or presence of foreign banks affect the performance of domestic banks existing in the industry? The availability of population data on foreign presence and the supplementation of BankScope data on Nigerian banks enable the use of econometric models of bank performance to provide estimates of foreign presence effects. This approach involves the use of accounting measures of performance which involves the use of proxies for profits, income, costs, and risks. The aim is therefore to provide estimates of foreign presence in the banking sector that would be comparable to those of the manufacturing sector

Question 3: How does the approach taken towards the computation of foreign presence measure affect spillover estimates?

This is a methodological question, which involves two procedures. First is to illustrate the potential effect of sampling properties and data structure on foreign presence measurement using the unique dataset of the Nigerian manufacturing sector. Second is to show the relevance of this effect by highlighting its neglect in literature

1.5 Objectives of the Thesis

The overall objective of this thesis is to estimate FDI effects on Nigerian manufacturing firms and banks, and highlight the relevance of employing appropriate measurements of foreign presence. The manufacturing firms sample cover 219 firms over the period 1998-2003, while banking sector data cover 38 banks over 1992-2009.

The study will:

1. Provide a detailed description of the operating environment in Nigeria, and its implications on FDI
2. Employ unique datasets on Nigerian manufacturing firms and banks for econometric estimation of foreign presence impact on productivity or performance
3. Attempt to harmonise the theories of foreign presence effects on manufacturing firms and banks
4. To show the importance of appropriate measurement of foreign presence using Nigerian manufacturing firm data, and highlight its lack of attention in literature by conducting extensive literature reviews.

1.6 Contribution of thesis

This study contributes to the debate of the direction and extent of productivity effects of FDI on domestic firms by the use of unique panel data on Nigerian manufacturing firms (NMES) and banks to provide estimates of foreign presence impact on productivity or performance, in order to arrive at a standpoint on a rather ambiguous area of research. Our results which show positive impact of FDI on Nigerian manufacturing firms and its absence on banks contribute to hypotheses about spillover effects. Of particular importance is that the present study provides evidence in support of "catching-up" hypothesis (Findley, 1978) which is the notion that sectors with large technology gaps between domestic and foreign firms benefit more from spillovers, as the technological levels of domestic manufacturing firms in relation to MNCs is low, which is not the case among domestic banks. As far as we know, there is no comprehensive study on FDI spillover effects on banks in literature.

This study also synthesizes the empirical investigation of FDI effects on manufacturing firms with that of the banking industry, by providing comparisons of various aspects the two industries which show their ideological or theoretical similarities in terms of FDI effects despite their wide-ranging differences

A crucial contribution of this study is that it illustrates how the approaches towards the computation of foreign presence variable can affect estimates of FDI spillovers. In particular it shows that measures of foreign presence are sensitive to the sampling procedure implemented and the quality of data employed in the analysis. Thus in exception of cases where the data used for estimations are obtained from a census, foreign presence measures computed from an existing dataset obtained for the purpose of estimating production functions can lead to misleading results, as the measure becomes a random variable subject to sampling error. An extensive literature review conducted in this study reveals that previous studies have paid little attention to the relevance of computing an appropriate measure of foreign presence.

1.7 Structure of thesis

The general approach in each Chapter of the thesis is to provide a detail study or analysis of manufacturing firms alongside banks in Nigeria. Most chapters end with a comparison of both sectors in other highlight similarities and differences. In summary:

Chapter 1 provides the basic research questions, objectives and overview of thesis; with a description of FDI trends in the globe, developing countries, Africa, and Nigeria.

Chapter 2 explores the Nigerian environment with detailed description of manufacturing industry and banking industry. It highlights the major changes that have occurred in the two sectors, and also macro measures of performance of the two sectors which aid comparisons.

Chapter 3 highlights global FDI policies and Nigerian policies that affect FDI. It shows that FDI policies have been alternating between liberalization and restriction

Chapter 4 provides the theoretical approaches towards FDI spillovers while pointing out the different channels through which spillovers occur. It also highlights the links of FDI spillover theory to the neoclassical trade theories and its applicability to banks and other service sectors.

Chapter 5 is a crucial chapter in the thesis where an extensive review of spillovers is carried out. It focuses on the nature of the investigation carried out, in order to identify gaps or failure to emphasize on the computation of measures of foreign presence.

Chapter 6 describes the data employed for the empirical investigations. A detailed description of both manufacturing firm data and banking data was provided. A comparison of data from the two sectors was provided at the end of the chapter

Chapter 7 consists of the econometric modeling and presentation of results for the specifications of productivity or performance in both manufacturing and banking sectors.

Chapter 8 provides the Overall conclusion of the thesis which points out how the research questions were answered and points out the need for further research.

Chapter 2: The Nigerian context

2.1 Introduction

This Chapter attempts to describe the environment in which this study is based. In other to understand the dynamics of FDI in Nigeria, some important features of the country is worthy of mention. This Chapter positions the Nigerian environment as one with large FDI potentials as a result of its population and oil reserves on one hand; and on the other hand as a country with significant issues of uncertainty, fuelled by political instability, ethnic/religious tensions, and corruption. A brief history of FDI in Nigeria is also provided, pointing out the relevance of events such as the decline in salve trade and subsequent shift towards legitimate commerce by the British, French, and German firms; and Indigenization era which saw the decline of foreign presence in all industries in the country. Focusing on the two industries of interest, we highlight the decline of the manufacturing industry and the dynamic/volatile nature of the banking industry. The Chapter ends with a comparison of the two industries

2.2 The Nigerian environment

Nigeria is popularly referred as the "sociopolitical giant of Africa" due to its position as the most populous country in Africa and the continent's largest oil producer (Rotberg, 2008). The country is the third largest economy in Africa (following South Africa and Egypt), and it has the tenth largest oil reserves in the world. The combination of these characteristics makes Nigeria a potential priority choice for FDI in Africa and to some extent the world. But in reality, despite the achievements of the country in terms of FDI inflows in Africa indicated in Chapter 1, the current position of Nigeria in terms the ability to attract FDI is grossly unsatisfactory, given its enormous potentials.

The nation has over the years shown to be rather unstable or chaotic in more critical terms. A combination of varying degrees of policy overturns; political instability and tensions, and communal/religious/ethnic violence have been experienced in the nation (Ogunkola and Jerome, 2006). Also poor business environment in terms of unreliable power supply, and transportation problems adversely affect its investment potentials (Iarossi et al. 2009). In addition, a global image of high prevalence of economic crimes and corruption contributes to its problems. Therefore, in a rapidly globalizing world, these problems dent the image of Nigeria as a potential investment destination, despite its overwhelming advantage in terms of population and GDP in Africa. However, in order to cushion the effects of the challenging conditions, the Nigerian government offers various

incentives such as tax breaks and subsidies for “pioneer” or foreign firms which are deemed to enhance considerable increases productivity and promote technological transfer (Kehl, 2009).

However, the shortcomings of Nigeria’s business/investment environment are not the same across regions. A survey conducted by the International Bank for Reconstruction and Development, and The World bank in 2009, shows that Bauchi State has the leading investment environment while Sokoto has the least. In recent times, the potential of Bauchi State as an investment location is deemed to have diminished due to the emergence of religious/political violence that has marred the security conditions of the state.

To elaborate on the Nigerian situation, it is important to highlight some of the salient facts about its economy. Nigeria as an independent nation is a relatively “young” country that attained its independence from British colonial in 1960. Subsequent endeavors to restructure and reposition the economy, in order to achieve rapid development was interrupted with political and ethic tensions, which eventually resulted to a civil war from 1967 to 1970. The end of the civil war was followed by an oil boom in 1973, which brought huge wealth to the nation, but this was accompanied by increased government monetization of the oil proceeds and large fiscal deficits (Sanusi, 2002). The monetary policy in the early 70s comprised of direct controls of interest rate, exchange rate, aggregate credit, and cash reserve requirement. In addition, government policy shifted towards transfer of ownership to Nigerians, with the enacted of Nigerian Indigenization policy in 1972. The late 70s saw deteriorating economic conditions as inflation increased from 10.4% to 20.3% between 1975 and 1979; and concurrent decline in GDP growth (Sanusi, 2002).

A global slump in oil prices resulted in an end in the oil boom and a huge reduction in government revenue which was largely dependent on the industry. The response to the economic situation was further stringent control measures on exchange rate and import restrictions, as provided by the Economic Stabilization Act of 1982. This followed political distortions as leadership of Nigeria changed hands in 1983 and 1986, following coup plots. The military administration present in 1986 brought about the Structural Adjustment Programme (SAP), which was broadly an broadly a development plan aimed at achieving economic diversification, improving the balance of payments position, and achieving non-inflationary economic growth; with economic liberalization and elimination of controls as basic objectives (NCEMA, 2003). SAP was therefore a considerable attempt towards FDI promotion, as its extensive liberalization policies were encouraging to potential foreign investors. However, the rather ambitious development programme was interrupted by three political distortions in the decade that followed.

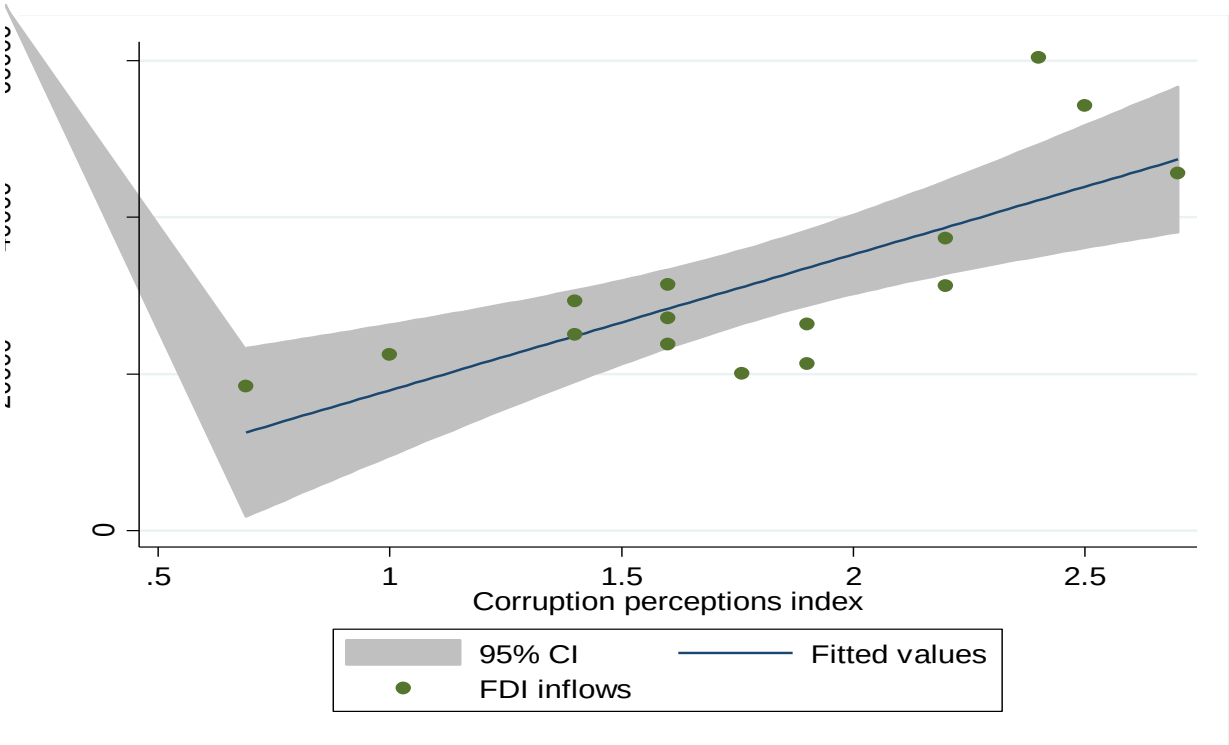
The transition to civilian administration headed by Olusegun Obasanjo in 1999 brought about a renewed commitment towards achieving a stable and enabling economic environment for both domestic and foreign investment. Government emphasis on structural reforms, socio-political reconstruction, privatization, and building a positive international image restored hope on potential investors to the country (Soludo, 2007). A new sense of transparency in public institutions was in place, as the civilian administration ushered in various checks in the system in an attempt to combat corruption and economic crimes. This led to the establishment of the Independent corrupt practices and other related offences commission (ICPC) in 2000, and Economic and Financial Crimes Commission (EFCC) in 2003, to investigate and prosecute corrupt practices, and to detect and prosecute economic and financial crimes in various institutions respectively. Despite the shortcomings of these commissions in carrying out their roles, they both achieved considerable success in the short-term. According to Transparency International, Nigeria's ranking amongst most corrupt countries in the world fell from 2nd in 1999 to 32nd in 2007, gaining 1.2 points on the corruption perceptions index, as shown in Table 2.1.The global ranking had continued to improve in 2008, but had recently been declining in 2009 and 2010.This development was deemed to have affected FDI inflows to the country as the period also had remarkable increases in FDI inflows, as corruption is deemed to increase political risk which deters potential foreign investors (Kehl, 2009). Empirical evidence has also shown that corruption negatively affects FDI inflows (Shleifer and Vishny 1993; Hines, 1995; Mauro, 1995; World Bank, 1997; Rose-Ackerman, 1999; Davoodi, 2000; Wei, 2000; Ackay, 2001; Lambsdorff 2003). Figure 2.1 shows some evidence of positive correlation between corruption perception index and FDI flows in Nigeria.

Table 1Table 2.1 Corruption rankings of Nigeria

Year	Corruption perceptions index	Global corruption rank
1996	0.69	1
1997	1.76	1
1998	1.9	5
1999	1	2
2000	1.6	2
2001	1.4	2
2002	1.6	2
2003	1.4	2
2004	1.6	3
2005	1.9	6
2006	2.2	18
2007	2.2	32
2008	2.7	59
2009	2.5	50
2010	2.4	44

Source: Transparency International: Corruption Perceptions index – various issues

Figure 2.1 Relationship between Corruption and FDI inflows



Aside from tackling corruption, the Nigerian government has also taken necessary steps towards boosting the private sector, which is a major element of the National Economic Empowerment and Development Strategy (NEEDS) implemented in 2004. This lead to extensive privatization of various public institutions in the country; which included traditional government institutions such as the National Electric Power Authority (NEPA), and Nigerian Telecommunications Limited (NITEL). As expected, the privatization programme brought in considerable FDI inflows to Nigeria, thus as indicated in Chapter 1, FDI inflows to Nigeria increased 108% from about $5 billion in 2004 to $13 billion in 2005 (UNCTAD-WIR, 2006). At that point the nation seemed to be on a sustainable growth path, as the nation plunged into an economic boom, fuelled by high oil prices and successes in its home-grown economic reforms (Iarossi et al. (2009). Average GDP growth of 7% was maintained between 2003 and 2007; non-oil exports grew by 8% in between 2004 and 2007; and external reserves reached a record height of $43.5 billion in 2006 (Soludo, 2007).

However, in recent times, Nigeria has been facing numerous challenges in implementing its economic development programme, and in its efforts in building a positive public image for potential investors. The re-emergence of crime, ethnic/religious conflicts have contributed to a gradual fall in confidence from international investors. Also the recent global financial crises has affected FDI flows to the country, albeit marginally.

2.3. History of FDI in Nigeria

2.3.1. Pre-colonial era

Nigeria's economic relationship with the global economy existed before the creation of the country in 1914. The two main regions, the northern savannas and the southern forest regions had trade relationships with countries within Africa and beyond. A notable and well established international trade activity was the Trans-Saharan trade of the northern region of the country. This involved trade between the northern region and the North African countries, Europe, and the Middle East. In the southern regions, trade was concentrated on the coastal regions. The geographical proximity to the Atlantic Ocean facilitated trade with different countries in the southern region. The ports of the Bights of Benin and Biafra hosted the major trade transactions of the southern region. European countries led by Britain, France and Germany were the major trading partners with Nigeria.

Within Nigeria, the two major navigable rivers: rivers Niger and Benue were the channels in which items of trade were navigated out of the region. The major items of trade in both the northern and

southern regions were salt, leather goods, weapons, textiles, and slaves. These were traded by barter for items such as beads, iron, copper, and cowries. Between the sixteenth and nineteenth century, slave trade was the most important economic activity in the region (Falola and Heaton, 2008). Indigenous leaders were deeply involved in slave trade as a major source of revenue for their personal interests such as reinforcing their empire with military weapons against their opponents. Thus slave trade was promoted by the traditional leaders and middlemen in both the centralized communities in the northern region and the southwest regions, and the decentralized regions of the southeast region. This lucrative trade continued till about 1850 despite its abolition by the British in 1807.

With the decline of slave trade in the 1850s, attention was shifted towards "legitimate commerce" which was dominated by the trade in palm products. Initially the European firms which engaged in trade with Nigeria conducted trade from the bights of the southern region. These firms did not operate beyond the coastal regions due to fear of malaria infection and unfamiliarity of the geographic structure of the interior of Nigeria among other reasons. As a result they relied on middlemen in the Delta and Calabari regions of southern Nigeria for trade negotiations. These indigenous middlemen became unreliable to the trading partners especially the British firms who gave them credit facilities which they constantly defaulted. As a result of this unfavourable dependence on the middlemen, the British firms sought ways of bypassing these middlemen to operate directly in the interior parts of Nigeria. Expeditions made by Dr William Balfour Baikie in 1854 on the river Niger led to the demystification of the complexities attributed to the region (Falola and Heaton, 2008). Baike also made use of the quinine drug as a preventive measure against malaria infection. His success in the interior of the region inspired Macgregor Laird to establish the first steamer business in the Niger in 1857 (Falola and Heaton, 2008). Although the business folded up after some time due to competition from within and outside the region, its existence proved that foreign firms could survive in the interiors of the region and therefore bypass the undesirable coastal middlemen. As a result of this revelation, different firms originating from Britain, France and Germany began expanding their operations towards the interior of the region, especially within the major rivers. The expansion of French and Germans firms towards rivers Niger and Benue posed a threat on the British interests in the region. To counter the feared competition; the British granted a royal charter to a British firm Royal Niger Company in 1893. The charter gave the company, which was owned by George Goldie, control of the trade policies in the Niger. The Royal Niger Company consolidated with both British and French firms to become the largest firm in the Niger. This dominance led to the crowding out of both foreign and indigenous firms in the region.

This account of foreign operations in the pre colonial era reveals the plausible reasons for investing in Nigeria. This sub-section has shown that amongst other attractions to the region, the primary pull factors were the availability agricultural and human resources. The main agricultural resource being palm oil and the basic human resource was in the availability of slaves due to the large population of the region. Trade in these items were enhanced by the geographical proximity of the region to the Atlantic Ocean. The two navigable rivers within the interior of Nigeria, rivers Niger and Benue also became an attraction due to its link to other countries in the continent. These attractions lead to the scramble for establishing lasting interests in the area by European firms. British firms succeeded in dominating the commercial activities in the region, curbing competition from French, German and local firms. Thus Nigeria has been an important destination for FDI. Its strategic location at the coast of the Atlantic and its abundant human resources are the most likely pull factors.

2.3.2. Colonial era

Amongst the reasons for the colonization of Nigeria by the British government, the trading interest of the British is of particular interest to this study. In order to secure their economic interests in the region, British firms called upon their government to take control of the Nigerian territory as a means of regulating the rising competition experienced in the region. The main threats to the British firms were the increased entrants of firms from other European countries like France and Germany; and the monopolistic practices of the indigenous middlemen in the coastal regions of the Nigeria territory (Falola and Heaton, 2008). Thus the perception at that time was that a take over of the territory by the British will ensure that the economic interests of the British firms are duly protected (Aremu, 2003). Colonization of Nigeria had started since 1861, but the amalgamation of the Nigeria territories occurred in 1914, under the leadership of Frederick Lugard (Falola and Heaton, 2008).

In general, the main activity undertaken by the colonial administration was the exploitation/extraction of Nigeria's agricultural, mineral and human resources. According to the Dual Mandate established by the colonial administration, the activities of the colonial government would satisfy the interest of both the British and Nigerians. The British administration aimed at expanding trade by boosting the exportation of raw materials such as cocoa, oil palm, groundnuts, coal, tin and columbite and the importation of finished goods (Adeoti, 2002). Also, to enhance the trading activities within the region, the colonial government implemented rapid infrastructural development within Nigeria. Of particular significance in that period, was the development of transportation infrastructure in order to aid trade within and outside the territory.

The firms that conducted businesses in Nigeria were not all British, as French, Dutch and German firms were also operating in the region. The activities of the foreign firms constituted a large majority of the external trade on Nigeria, and enormous profits were made by these firms. At that time, the economy of Nigeria was largely controlled by international demand for the products of Nigerian farmers and traders (Adeoti, 2002). The administration promoted the production for exportation of cash crops such as groundnuts from the northern region of Nigeria; cocoa from the south western region; and palm oil from the south eastern and delta regions. The profits made by these firms were repatriated to their respective countries while the Nigerian work force used to accomplish their aims received marginal wages. Thus an assessing the impact of the activities of the foreign firms on the indigenous citizens could be ambiguous as their operations provided employment for the indigenes in both the upstream and downstream sectors on one hand; but led to crowding out of local firms and exploitation through poor wages on the other hand. In general, prior to the Second World War, the activities of the foreign firms which according to the Dual Mandate would be of benefit to the indigenous population had no significant positive effect them before.

A major change in the policies of the colonial government occurred after the Second World War. As a result of the emergence of indigenous elite class, the colonial administration was pressured towards engaging in nationalistic policies. Thus the British controlled government undertook developmental projects that were more beneficial to the indigenous citizens. The pressure laid on them also resulted in the shift from extractive activities which characterized the operations of the foreign firms to manufacturing activities. As the call for nationalization mounted, the colonial administration enacted laws to ensure that the interest of the British owned firms were protected. The pioneer manufacturing British manufacturing firms were given preferential treatment through legal amendments. Aremu (2003, p.47) and Ogbuagu (1983, p.244) outlines the policies that were put in place prior to independence as: Aid to Pioneer Industries Ordinance of 1952; Income Tax Ordinance of 1952; Industrial Development (Import Duties Relief) Acts of 1957; Industrial Development (Income Tax Relief) Act of 1958; Custom Duties (Dumped and Subsidized) Acts of 1958; Customs Drawback Regulations of 1959; and the Income Tax Act of 1959. These amendments and laws were all geared towards ensuring that the British firms remained dominant in the region after independence.

2.3.3. Post Independence era

The end of the colonial rule occurred on the 1st of October 1960, and Nigeria gained independence from the British government. The policies that were put in place to favour the foreign pioneer firms were still in effect for two years after independence. But in 1962, the liberal policies towards the activities of foreign firms began to shrink. The Exchange rate Control Act of 1962 demanded the permission of the Nigerian Minister of Finance for payments outside the country. Another drift from the liberal policies towards foreigners was the campaign that Nigerians must occupy key positions the ownership and control of the factors of production (Aremu, 2003). Three regional indigenous universities were established, with significant R&D institutes to enhance the capability of Nigerians in scientific and industrial research and technology (Adeoti, 2002). Thus although foreign investment was promoted, indigenous participation was gradually enforced. A further departure from the liberal policies came in the form of bureaucratic obstacles imposed on potential foreign firms wishing to invest in Nigeria. The Immigration Act of 1963 demands that foreign firms wishing to operate in Nigeria must be granted a 'Business Permit' and an 'Approval Status' before being allowed to operate in the territory.

The general perception in this period was the lack of trust on the activities of the foreign firms by the indigenous ruling class. Thus gradual departure from the liberal policies was experienced in the mid 1960s

2.3.4. Indigenization era

The Indigenization era is a crucial period in studies on FDI in Nigeria. The lack of growth in the absolute values of FDI in Nigeria during the 1970s could be attributed to the effects of the indigenization policies. But it should be noted that era which involved "Nigerianization" of the economy started in the colonial era. After the Second World War, the growing pressure from the indigenous elite led to the consideration of placing Nigerians in helm of affairs during the colonial era. The first of such attempt towards "Nigerianization" was the establishment of a Marketing Board System which gave the Nigerian government control over the marketing of Nigeria's export crops (Ogbuagu, 1983). This followed the mild restrictive measures adopted post 1962, which has been mentioned in the previous section. In 1966, the country witnessed two military coups which led to the installation of Gen John Aguyi-Ironsi in January; and later the instalment of General Yakubu Gowon in July of the same year, after the assassination of the former. Under General Gowon's rule,

preludes to the indigenization policy include: Companies Act of 1968; Banking Act of 1969; Petroleum Act of 1969; and Patents and Design Act of 1970. These were basically measures to ensure greater indigenous participation in the different aspects of the economy.

The actual indigenization decree was declared in 1971 under Gowon's administration. The basic aims of the decree were threefold: The first was to increase the opportunities of Nigerian business men; the second was to promote the retention of profits into the economy; and the third promote foreign investment in specific sectors such as intermediate and capital goods production sectors (Ogbuagu, 1983). The Indigenization era came in three statutes: Nigeria Enterprise Promotion Act of 1972; The Nigerian Enterprise Promotion Act of 1977; and The Nigerian Enterprise Promotion Act of 1987. Enterprises in Nigeria were classified into three schedules: Schedule I, Schedule II and Schedule III.

Schedule I enterprises consisted of companies in which the ownership are reserved exclusively for Nigerians. Foreigners were therefore not allowed to participate in the ownership or control of the listed enterprises. These enterprises include selected companies in the following categories: small scale industries, medium scale industries, processing industries, services sector, transportation industry, entertainment, media, and retail trade (Ogbuagu, 1983).

Schedule II requires foreigners to invest a maximum of 40% of equity in the listed enterprises. These enterprises included some large scale import substitution industries, processing industries, food industries, commercial activities, transportation, construction industries, etc (Ogbuagu, 1983).

The promulgation of the Nigerian Enterprise Promotion Act of 1977 led to a revision of Schedule I and Schedule II, and the addition of a entirely new schedule, Schedule III. The reviews of the first two schedules was merely the removal of a few enterprises listed previous Act. But Schedule III involved the extension of the limit of foreign participation to 60%, especially in sectors with high technological requirements (Aremu, 2003).

The indigenization era marked the most restrictive measures towards foreign direct investment in Nigeria's history. It is therefore not surprising that volume of FDI inflows in Nigeria were somewhat stagnant during this era. But this poses some interesting questions regarding the lack of distrust on the activities of foreign firms in the region. Did Nigerians experience strong crowding out effects or negative spillovers prior to the indigenization era? Or was indigenization motivated by mere political sentiment? A notable number of literature have attributed the motivation of indigenization policies to the lack cooperation of the foreign firms with the Nigerian government in difficult situations such as the civil war which lasted between 1967 and 1970 (Collins, 1977; Forest, 1977; Ogbuagu, 1983; Onoge, 1974).

2.3.5. Investment promotion era

The indigenization era was followed by another period of restrictive measures. Under the leadership of General Olusegun Obasanjo, the National Office of Industrial Property Act of 1979 was enacted. The major aim of this act was to scrutinize imported technology coming into Nigeria. The idea was to narrow the domestic technological gap by channelling imported technology to specific priority areas (Aremu, 2003). Thus the act required that foreign firms would be examined carefully at the entry stage to ensure that they conform to the objectives of the act.

In the wake of global calls for more FDI promotion in the 1980s, the Nigeria government sought measures to soft peddle the restrictive measures imposed during the 1970s. This led to the promulgation of the Nigerian Enterprise Promotion Act of 1987. The basic addition made to the 1977 act was that under the 1987 act, foreign firms were given the opportunity increase their percentage holdings in any enterprise without increasing their voting power (Aremu, 2003).

The most recent promotional acts that confirmed the "open" status of the country the creation of the Nigerian Investment Promotion Commission (NIPC), and the Foreign Exchange Monitoring and Miscellaneous Provision (FEMAMP) in 1995. In particular the establishment of NIPC marked the transition of Nigeria to a country completely open to FDI. The agency is therefore a member of the World Association of Investment Promotion Agencies. The main objectives of NIPC are to co-ordinate and monitor all investments in the country. The various department of NIPC engage in diverse activities such as provision of a one stop investment centre, investment promotion, investor relations, policy implementation and external relations, etc.

The government of Nigeria has over time, developed other schemes that indirectly affect FDI in the country. One of such schemes is the Export Processing Free Zones Scheme (EPFZS). The scheme provided incentives to businesses which engage in the exportation of goods and services. Demarcated zones called Export Processing Zones (EPZs) were set up, and the management of these zones was delegated to the Nigerian Export Processing Zones Authority (NEPZA). Other notable efforts to promote FDI in Nigeria include granting of Pioneer Status which gives tax holiday to eligible firms; and legal provisions that enable repatriation of profits (UNCTAD, 2008).

2.4. An Overview of Nigerian manufacturing industry.

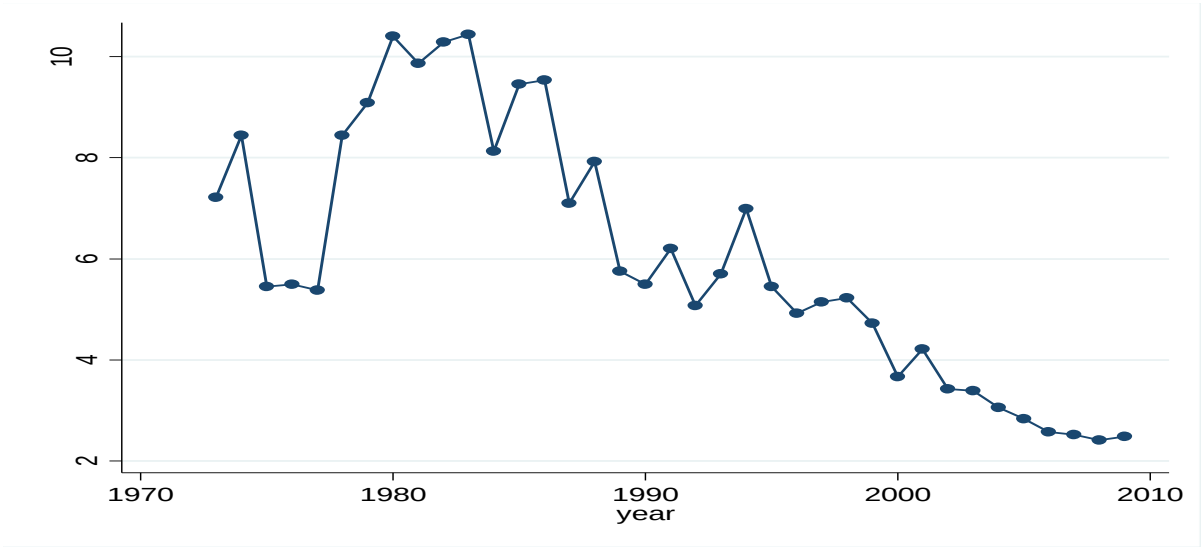
As the Nigerian manufacturing industry is part of the focus of this study, it is quite appropriate to mention some of the features of the industry. The manufacturing sector of Nigeria is still in an infant stage, compared to other sectors in the country and to other similar African countries like Ghana, Kenya, and Botswana (Teriba et al 1981; Iarossi et al. 2009). In terms of share of Gross Domestic Product (GDP), the manufacturing sector contributes a relatively small amount. Table 2.2 indicates that the share of manufacturing in GDP has been declining over the decades, from 7-8% in the 70s and 80s, to only 3% between 2000 and 2009. Figure 2.2 show that rapid growth in manufacturing was experienced in the late 70s, which correspond to the "oil boom" years in Nigeria, preceded by exponential growth witnessed after independence (Teriba et al. 1981) due to the import-substitution policies that led to a 7% rise in late 60s (Utomi, 1998; Soderbom and Teal, 2002). As at 1980, the manufacturing sector was at its peak of about 11% of GDP. This declining trend has been the case till date, as minor increases in manufacturing shares over the years has been largely unsustainable. At its record lowest share value in 2008, manufacturing contributed only 2.4% of GDP, while Crude Petroleum and Agriculture contributed about 37% and 33% respectively (CBN Statistical Bulletin, 2009).

Table 2.2 Growth in manufacturing sector over the decades

Indicator	1970-1979	1980-1989	1990-1999	2000-2009
Manufacturing (% of GDP)	7.1	8.9	5.5	3.1
Capacity utilization (%)	75.4	50.3	34.7	51.2
Manufactured exports (% of merchandise exports)	0.4	0.1	1.6	2.5

Source: CBN Statistical Bulletin, and World development Indicators (WDI)

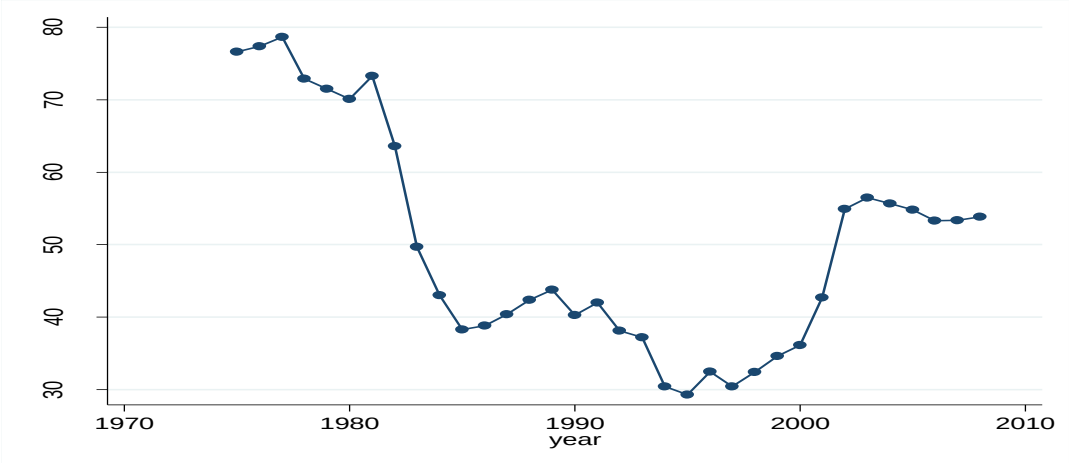
Figure 2.2 Nigerian Manufacturing sector as a percentage of GDP



Source CBN Statistical Bulletin (2009)

A common measure of the efficiency of manufacturing, capacity utilization, also indicates the the Nigerian manufacturing sector has been performing poorly. Table 2.2 indicates that capacity utilization declined from an impressive value of about 75% in the 70s to about 50% between 2000 and 2009. This literally implies that manufacturing industry is currently operating at half of its capacity. This is related to the fact that high costs of production and tough environment result in both domestic and foreign plants producing below capacity (Kehl, 2009). Figure 2.3 shows a remarkable slump from about 73% in 1981 to about 38% in 1985. However, signs of gradual increase have been observed in recent times (Iaorossi et al. 2009).

Figure 2.3 Capacity Utilization in Nigerian Manufacturing sector



Source CBN Statistical Bulletin (2009)

Among numerous reasons for the decline of manufacturing growth and capacity utilization, power outages, poor transportation, low level of technological know-how, and unrest in the Niger-Delta region are most prevalent; resulting to indirect costs of about 16% of sales (NISER, 1997; Iarossi et al. 2009). This adds to the fixed cost commonly borne by firms, due to the extensive importation of raw materials and machinery. This is particularly a problem that led to the poor performance of steel companies which depend highly on importation of machinery (NISER, 1997) Of particular adverse effect on manufacturing is the impact of power outages experienced in Nigeria. About 97% of all Nigerian firms are known to experience significant power outages (Iarossi et al. 2009). Considerable transportation problems also affect manufacturing operations. As at 2004, only about 15% of Nigerian roads are paved despite the fact that about 70% of transportation by industries are done by road (Iarossi et al. 2009).

Another plausible explanation for the decline in capacity utilization in Nigerian manufacturing could be the incidence of "Dutch disease". The term "Dutch disease" was coined in Corden and Neary (1982) to depict the Netherlands experience where the increase in earnings from gas exportation resulted in an appreciation of the exchange rate, and consequently, a fall in exports as previously competitive exporters lose market share (Barder, 2006). In general, "Dutch disease" describes a situation where an increase in revenue from natural resources leads to an increase in the expenditure on non-tradables, as well as its demand. The rise in demand for non-tradables results to an increase in its price, and an appreciation in the real exchange rate, making the exportation of sectors such as manufacturing and agriculture (tradables) less competitive and profitable. As a consequence, shrinkage in manufacturing and agriculture could be experienced, leading to a general decline in economic growth (Cordon and Neary, 1982, 1984; Budina et al. 2007; Barder, 2006; Ismail, 2010; Kareem, 2009).

Thus the decline in capacity utilization experienced in Nigeria, could be as a result of the general shrinkage of the manufacturing sector as a result of the "Dutch disease". However, various scholars argue that the "Dutch disease" effect does not explain the decline in Nigeria's manufacturing industry (Budina et al., 2007, Sala-i-Martin and Subramanian, 2003, Kareem, 2009, among others, content that "Dutch disease" does not exist in Nigeria). In particular, Sala-i-Martin and Subramanian (2003) pointed out that Nigeria experienced an expansion in manufacturing as the government invested heavily in the sector shortly after the oil boom in the early seventies. Therefore the actual problem in the case of Nigeria could be the expansion public sector participation in the sector which is bound to lead to inefficiencies, rather than the negative effect of the appreciation in real exchange rate. Thus the rationale for the substantial public investment in the manufacturing sector was rather

linked to political reasons which resulted in gross mismanagement of oil revenue (Bevan et al., 1998).

However, in terms of manufacturing export growth, marginal increases over the decades have been the case. Table 2.2 indicates that manufacturing export as a percentage of merchandise exports had increased six fold over the past 4 decades, despite the fact that it constituted only 2.5% of exports in recent times. Survey evidence shows that only about 7% of Nigerian manufacturing firms export, and the exporting firms are mostly those with some significant foreign ownership (Soderbom and Teal, 2002). Figure 2.4 shows that manufacturing exports were rather stagnant in the 70s, and up till the mid 80s; but in the late 80s, some considerable increases set in. Fuelled by the liberalization policies of the late 80s bundled in the Structural Adjustment Programme, considerable domestic and foreign investment started to increase marginally. However, the rise in manufactured exports is frequently plagued with fluctuations, as large downward swings do occur.

Figure 2.4 Manufacturing exports in Nigerian manufacturing sector

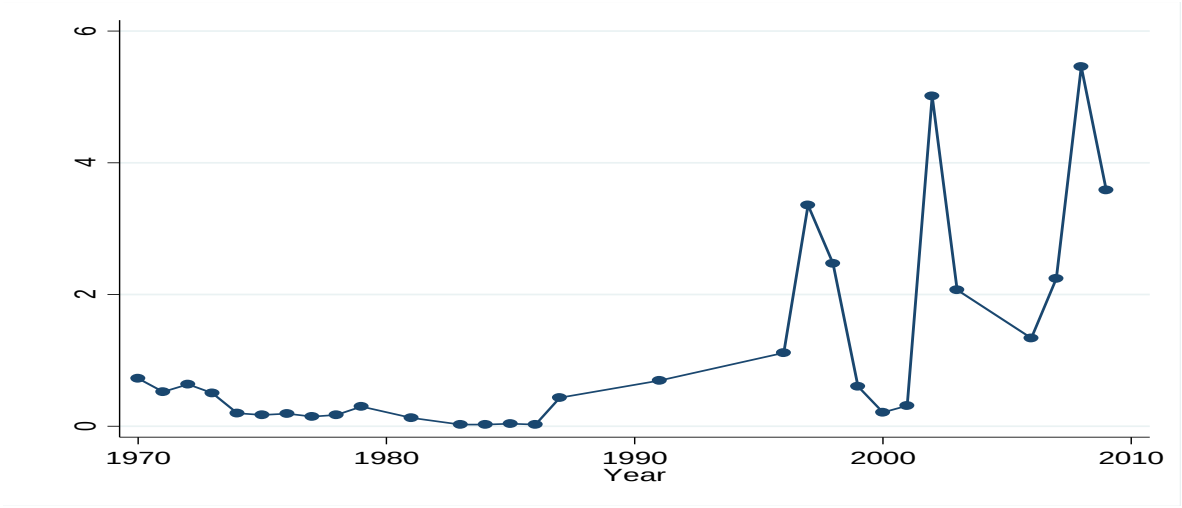


Figure 2.5 Percentage share of value added across manufacturing industries (1991-1996)

Source: World development Indicators (WDI)

In terms of labour productivity, low –technology light industries such as Food processing industry and Textiles industry has been dominant in the sectors in Nigeria since independence (Teriab et al. 1981; Ukpong and Anusionwu, 1986; Akintola-Arikawe, 1990; Iarossi et al. 2009). These industries have also outperformed others in terms of capacity utilization (Soderbom and Teal, 2002). Across regions, labour productivity is highest in Lagos State, followed by Ogun State; while Abuja, Sokoto, Kano, and Kaduna have recorded considerable levels of productivity (Iarossi et al. 2009).Firm sizes also show considerable variation, as larger firms are significantly more labour productive than small firms, due to the challenges in the business environment which are borne mostly by small firms (Iarossi et al. 2009). Small firms comprise above 90% of Nigeria manufacturing industry (Iarossi et al. 2009).

The number of workers employed in the sector had increase only marginally. As at 2001, the manufacturing sector employed about 328,000 workers which were approximately 10% of the work force. The ratio of wages to value added is also relatively low at 0.26 as at 2001 (World Bank, 2002).Overall, the manufacturing industries of Nigeria can be characterised as “dominated by low wages, low technology, production of light consumer goods and resource intensive and labour-intensive industries” (Adenikinju, 2005, pp.14).

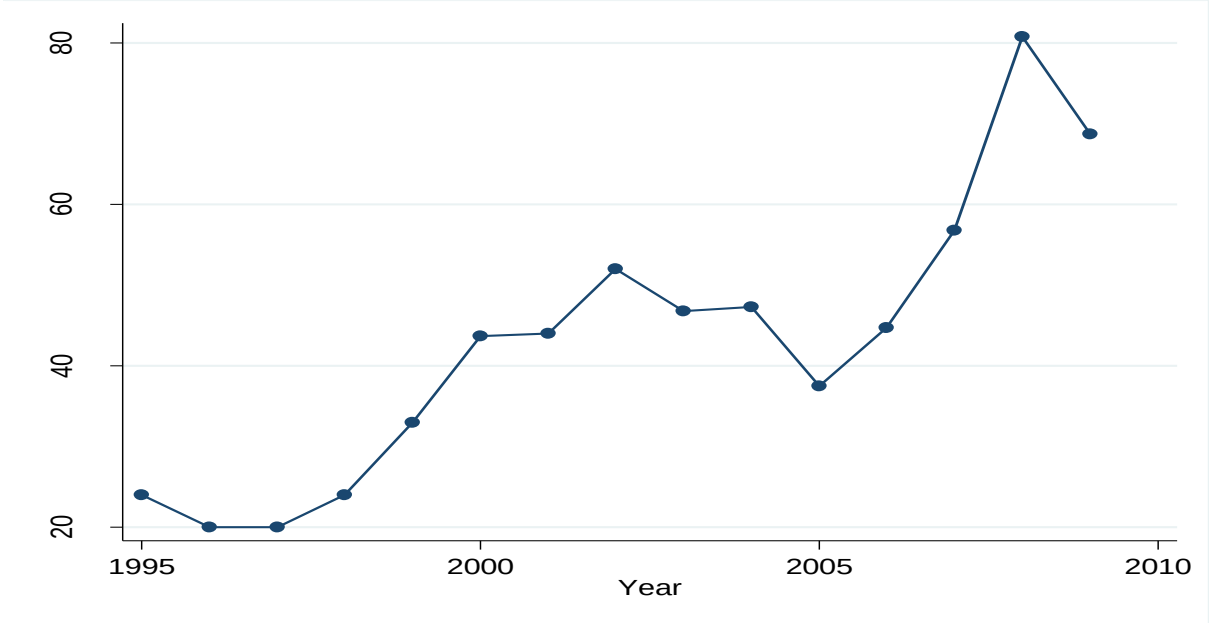
Prior to the emergence of oil production in Nigeria, FDI was concentrated in manufacturing industry (Teriba et al. 1981). The Nigerian Development plan in 1975 made efforts to encourage FDI in manufacturing by introducing liberal policies to encourage both indigenous and foreign investors

(Ukpong and Anusionwu, 1986). Survey evidence shows that good managerial ability increases productivity by 60-80% (Iarossi et al. 2009). Thus there is a tendency of Nigerian firms to rely heavily on expatriates to contribute their superior managerial and technical skills (NISER, 1997).In recent times, FDI in the non-oil industry has reduced to less than 2% of GDP (World Bank- GDF, 2002; Kehl, 2009).

2.5. An Overview of Nigerian banking industry.

Prior to analysing the impact of foreign presence on the performance of banks in Nigeria, it is worthwhile to point out salient facts about the sector. The Banking sector in Nigeria is a highly dynamic sector, characterized with boom and bursts, frequent changes in ownership and mode of operations, and reoccurring entries and exits (Nwankwo, 1980; Soludo, 2004; Agbaje, 2008; Ning and Dutse, 2008). The dynamic nature could be linked to the fact that the industry is the most regulated industry in the country (Jimmy, 2008), and it is affected by political and institutional factors (Lewis and Stein, 1997). The industry is concentrated, with the top 10 banks constituting more than 50% of the total industry assets and liabilities (Ezeoha, 2007). Figure 2.6 shows the plot of total assets of the banking industry as a percentage of GDP. It shows a clear upward trend over the past two decades. Of particular note is the significant growth in the post consolidation era (post 2005), making the top ten banks in Nigeria among the 1000 top global banks as at 2008 (Amah and Omoh, 2008). However, the recent banking distress in 2009 had led to considerable decline in its share of GDP.

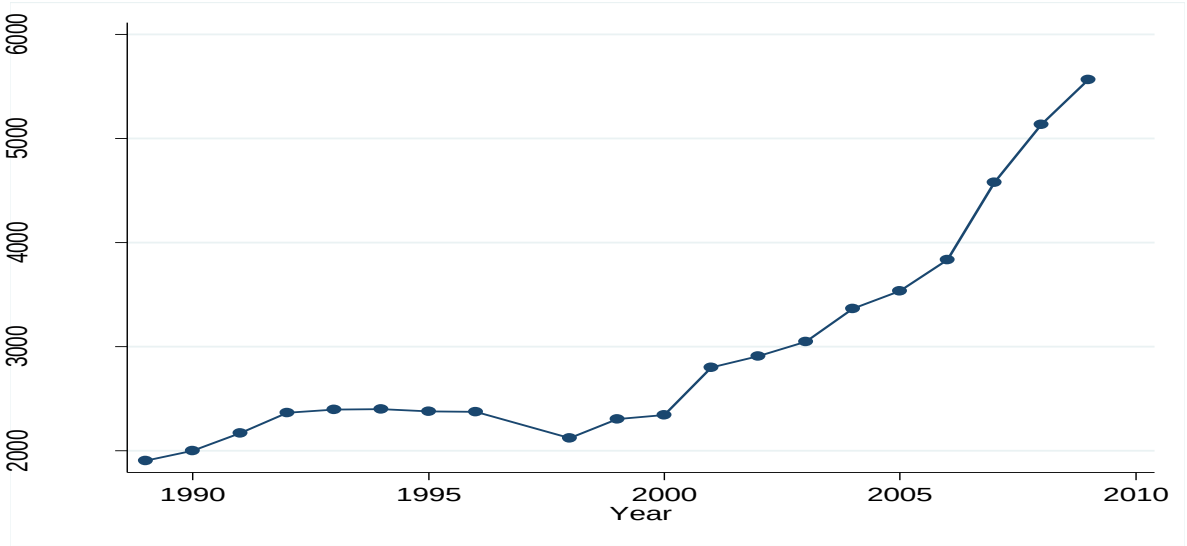
Figure 2.6 Nigerian banks total assets (% of GDP) – 1995-2009



Source: NDIC Annual report – various issues

Another indicator of the relevance of the banking sector in Nigerian economy is the number of bank branches in the industry. Figure 2.7 shows that this measure has grown remarkably over the past two decades, from a total of 2,001 in 1990, to 5,565 as at 2009. As in the case of share of GDP, rapid growth was highest after the bank consolidation programme of 2005, which led to a 63% rise in bank branches between 2005 and 2009.

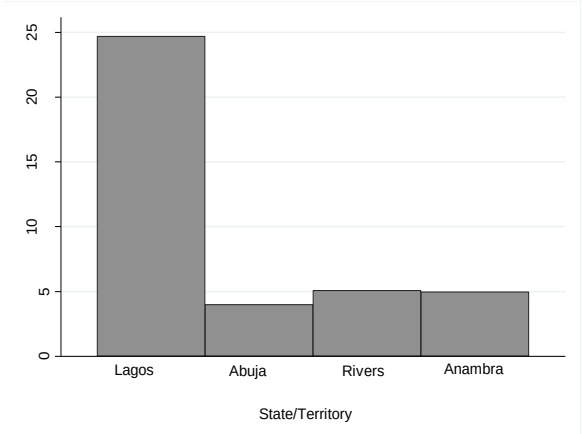
Figure 2.7 Nigeria banks total braches (1989-2009)



Source: NDIC Annual report – various issues

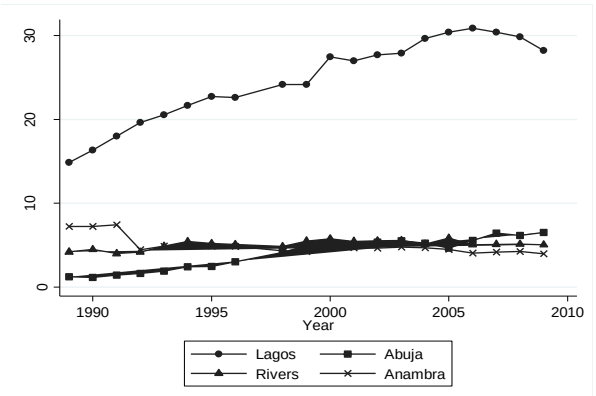
Another remarkable feature of Nigeria banking industry is its regional concentration. Figure 2.8a shows that banks are generally concentrated in the county's commercial city of Lagos, while the capital city of Abuja, the oil region of Rivers, and the south eastern of region of Anambra have relatively lower, but considerable number of bank branches. Figure 2.8b shows that the concentration of banks in Lagos has been growing over the past two decades, despite the central bank's efforts to spread out the distribution through bank legislation. This indicates that Nigerian banks, like most firms in the industry, establish branches in respond to demand. Thus banks are concentrated in regions with relatively higher economic activity, exemplified by its concentration in Lagos.

Figure 2.8a Regional distribution in bank branches



Source: NDIC Annual report – various issues

Figure 2.8b Regional growth in bank branches



Source: NDIC Annual report – various issues

2.5.1 Historical exploration of Nigerian banking sector

The section explores the nature of banking in Nigeria over time. The Nigerian banking industry depicts a special case of volatility in wide-ranging aspects. Thus the dynamic nature of the industry has sparked the interest of notable scholars, who have tried to give account of the industry at different points in time. These studies include Brownbridge (1996, 1998), Boone (2005), Lewis and Stein (1997), Woldie (2003), among others. Their research focused on different aspects such as: evaluation of quality of service (Woldie, 2003); assessment of the impact of policies (Brownbridge, 1996); political involvement in bank liberalization programme in the 1980s (Lewis and Stern, 1997; Brownbridge, 1998, Boone, 2005). Thus each work focused on the assessment or exploration of specific events/changes which occurred in the Nigerian banking history.

However, this section takes a different approach by conducting a historical exploration of changes that occurred in the banking industry with emphasis on entry, exits, mergers, and acquisitions. It is important to note that the historical exploration is not an attempt towards assessment or appraisal of the events that occurred in the industry, but rather an attempt to link the different forms of volatility experienced in the industry to the changes in the number of banks observable in the industry. Linking these events is not aimed at establishing causality, but an attempt to put the observable changes in the industry in context of the events that occurred in the industry. In particular, this work tries to link observable changes such as entry, exit/closure, take-over by regulatory bodies, and change in bank status, to changes in policies/legislation, political/leadership distortions, and economic fluctuations. Thus we try to portray the fact that the a change in the Nigerian banking industry such as the closure of a bank could have no link with the managerial decisions, but rather an event such as change in political leadership which could lead to the dissolution of the board of directors and entire management of the bank.

Colonial Period (1892 – 1959)

Commercial banking in Nigeria commenced with the establishment of the African Banking Corporation[3] by the British Treasury in 1872 (Alao, 2010; Anthony, 2008; Woldie, 2003). However, the bank was taken-over by the British Bank for West Africa (now First Bank of Nigeria Plc) in 1894. The bank was the sole operator in the industry and therefore became the agent of the West African Currency Board set up in 1912 (Woldie, 2003). This absolute monopoly was challenged in 1917 by the establishment of Barclays Bank Dominion, Colonial and Overseas (now Union Bank Nigeria Plc) in Nigeria. At this stage, banking in Nigeria was essentially a "foreign affair" and their operations were geared towards British commercial interests and that of the Colonial administration. Competition in the industry was very low, and credit, as expected, was available mainly for foreigners (Brownbridge, 1996; Anthony, 2008).

Faced with difficulties in obtaining credit from the colonial banks, and an unrestricted entry banking environment, local business men set up the first indigenous bank in Nigeria in 1933: National Bank of Nigeria Limited (Brownbridge, 1996). Thus foreign domination and monopoly of the industry was altered (Alao, 2010; Anthony, 2008; CBN, 2008). Two other indigenous banks followed suit: Agbonmagbe bank Ltd (now Wema Bank Plc) and African Development Bank Ltd (changed its name to African Continental Bank) started operation in 1945 and 1948 respectively. But soon after, another foreign bank, The British and French Bank was set up in 1949. At this point, the banking industry was somewhat balanced - foreign banks engaged in the financial interests of the Colonial government, and the indigenous banks focusing on the interests of the indigenes of the state or region where the local banks were located[4].

A notable feature of this era (1892-1952) was the absence of banking legislation. The only requirement for establishing a bank was to register it under the Companies' Ordinance (Woldie, 2003). With an environment with no regulation and unrestricted entry, Nigeria, unlike most African countries experienced an early indigenous banking boom in the late 1940s and early 1950s (Brownbridge, 1998; Ezeoha, 2007). Thus between 1947 and 1952, 185 banks had registered for

[3] African Banking Corporation had its headquarters in South Africa. Upon establishment in Nigeria, it engaged primarily on specie movement (Danjuma, 1993; Anthony, 2008)

[4] The local banks were regionalised, with each bank engaged in providing funds for development of the region/state it was located among other activities (Nwankwo, 1980; Brownbridge, 1998).

business (Woldie, 2003). However, most of these local banks collapsed shortly after commencing operation[5] (Brownbridge, 1998; Woldie, 2003).

In the light of the extensive failure of local banks, the 1952 Banking Ordinance was imposed. This marked the first banking legislation in Nigeria, and it specified entry conditions such as minimum capital requirements, reserve funds, and liquidity requirements (Woldie, 2003 p.72). The 1952 Ordinance was amended to form the Central Bank Act 1958, which led to establishment of the Central Bank of Nigeria in 1959. This development ushered in an era of bank regulation/legislation.

Table 2.3 Volatility in Colonial period: Era of absence of bank legislation (1892-1951)

Form of volatility	Number of cases	Outline
Political/leadership/civil distortions	3	• Amalgamation of northern and southern protectorates in 1914 • General strike by Nigerian Labour Unions that brought all work and businesses to a halt in 1945 • The Richards constitution was implemented, bringing a division of Nigeria into North, West, and East in 1946
Bank Entry	190	3 foreign banks and 187 local banks were established (entry was unrestricted)
Bank Exit	178	All 178 banks that collapsed were local banks
Bank Take-over	1	British Bank for West Africa took over African Banking Corporation

Table 2.4 Volatility in Colonial period: Era of bank legislation (1952-1959)

Form of volatility	Number of cases	Outline
Policies/Regulation/legislation	2	• Banking Ordinance of 1952 • The Central bank Act of 1958
Political/leadership/civil distortions	3	• The Lyttleton Constitution established a federal system of government in 1954 • Regional self-government established in the East and West n 1957 • Regional self-government established in the North in 1959

[5] As at 1952 only 4 local banks were existent: National Bank, African Continental Bank, Agbonmagbe Bank, and Merchants' bank. There survived due to funds injected by their respective regional/state governments.

Post Independence period: Indigenization wave (1960 – 1977)

Following the independence of Nigeria on the 1st of October 1960, it was expected that policies will lean towards indigenization. This was the case in Nigeria, as economic policies were bent on ensuring indigenous participation in all economic activities. The pioneer step taken to promote indigenisation was the establishment of the Immigration Law of 1962. The law stated conditions foreigners wishing to engage in any form of economic activity in Nigeria. One of such conditions was a specific ratio of Nigerians to non-Nigerians employable in foreign enterprises in Nigeria (Ogbuagu, 1983). Other laws that aimed at indigenization emerged in the 1960s: An Expatriate Quota Allocation Board was established in 1966, and a Companies decree was promulgated in 1968; where the latter mandated all foreign subsidiaries present in Nigeria to operate as a separate entity form their parent organisation. All these measures affected foreign participation in the banking industry during the period.

The most significant distortion from the course of Nigeria banking industry in this period was the civil war which occurred between 1967 and 1970. There was an attempt by the south-eastern part of Nigeria to form a secessionist state called The Republic of Biafra as a result of political, ethnic and religious tensions which existed prior to the war. Thus the defunct Republic of Biafra set up its own central bank and currency notes under the Bank of Biafra Decree 1967 (Symes, 1997). An entire new financial framework therefore emerged in the region with the main objective of financing the ongoing war. The Nigerian Federal Military Government fought against these developments, and with significant British support, the federal forces defeated the Biafran forces and regained control of the region. All establishments in accordance with the Biafran secessionist state where therefore abolished, and control of all economic and financial activities were centralised by the Nigerian government.

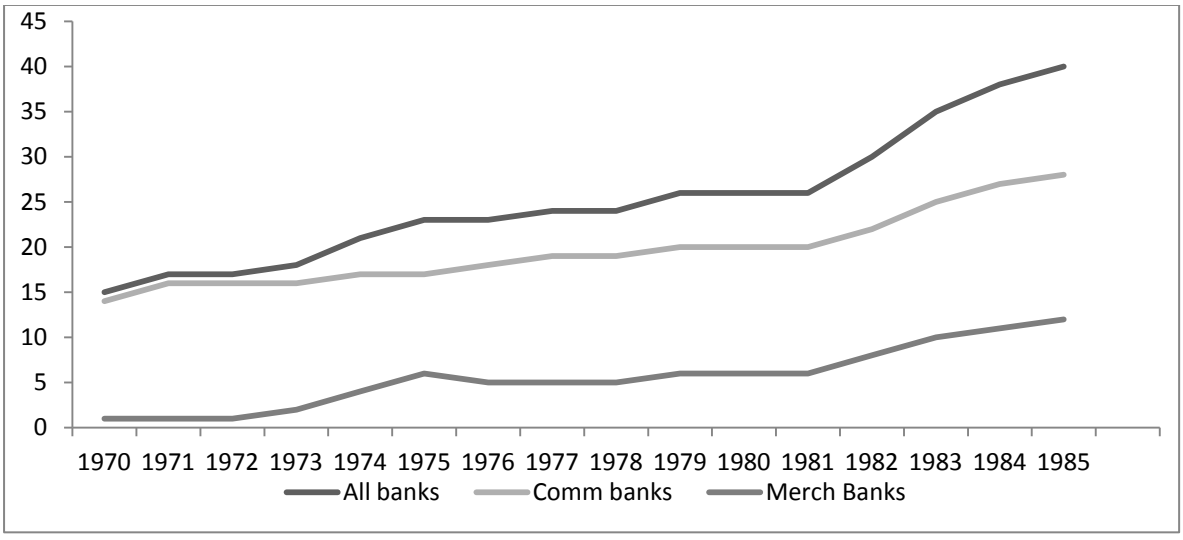
Despite the conflict existing in the late 1960s, central banking activities were not completely halted. In 1969, just months before the end of the war, the Central bank act of 1958 was amended, and the Banking Decree of 1969 was put in place. The decree gave extensive powers to the Central Bank of Nigeria (CBN) to regulate the quantity, cost, and direction of credit (Brownbridge, 1996). Thus the Central bank was empowered to set minimum and maximum lending rates. Shortly after the end the civil war, the military Government embarked on “consolidating political independence” by establishing the Nigerian Enterprise promotion Decree of 1972 (Collins, 1975, p.137; Ogbuagu, 1983, p.250). The decree was essentially aimed at advancing the indigenization wave that was already in place prior to the civil war. The 1972 decree specified statutory levels of foreign participation allowed in different forms of enterprises. Critics to this Military government alleged that the decree

was an “economic war” design to ensure that resources were channelled way from the defeated south easterners who were still devastated by the civil war (Ogbuagu, 1983).

The 1972 indigenization law was revised to establish the Nigerian Enterprise Promotion Decree in 1977. The 1977 decree imposed stricter conditions for foreign equity ownership of enterprises in Nigeria. Foreign participation in enterprises had a 40% ceiling. As a result of this development, the Federal Government acquired majority shares in all the colonial/foreign banks, transforming them to indigenous banks. At this point, only corporate bodies rather than private individuals could set up banks (Woldie, 2003). In the same year, the Rural Banking Programme of 1977 was established. This imposed commercial banks to open branches in rural areas. This led to the emergence of 200 new bank branches between 1977 and 1980 (Woldie, 2003). Hence a boom in indigenous banking was restored. However, due to lack of significant economic activity in the rural areas, the rural banks could not meet up with their overhead costs. This directive was a clear case of inefficient allocation of resources which expanded operations of banks in the form of branch network but achieved no significant rise in the intermediation role.

The first two decades after Nigerian independence experienced a combination of indigenization and expansion of banking activities. However, despite the distortions due to the civil war, banking activities regained its momentum in the 1970s. In particular, merchant banks emerged and expanded rapidly in the period. An external factor driving the expansion was the oil boom experienced during the 1970s which brought huge revenues from oil to the Federal Military Government.

Figure 2.9 Growth in number of banks (1970 - 1985)



Source: NDIC annual report – various issues

Figure 2.9 shows the increase in number of banks from 15 in 1970 to 40 in 1985 (Ezeoha, 2007). Commercial banks dominated the industry, and they maintained a steady growth while one merchant bank exited the industry between 1975 and 1976. The fact that the rate of growth of number of banks increased sharply during the economic downturn that started when oil prices ("oil glut") fell in 1981 is quite contradictory. In response to the worsening economic situation which was deemed to have occurred as result of too much public spending during the oil boom, the government resolved to embark on austerity measures. Thus the Economic Stabilisation Act of 1982 was put in place to limit importation, increase tariffs, and impose ceilings on central bank foreign exchange issues, among other measures (NCEMA, 2003).

Table 2.5 Post Independence period 1960 - 1985

Form of volatility	Number of cases	Outline
Policies/Regulation/legislation	7	• Immigration Law of 1962 • Expatriate Quota Allocation Board of 1966 • Companies decree of 1968 • Banking Decree of 1969 • Nigerian Enterprise promotion Decree of 1972 • Nigerian Enterprise Promotion Decree of 1977 • Economic Stabilisation Act of 1982
Political/leadership/civil distortions	9	• Transfer from Colonial rule to independent rule by Nigerian indigenes in 1960 • Coup plot and subsequent installation of a military government in January 1966 • Counter-coup plot and subsequent change in military government • Nigerian civil war between 1967 and 1970 • Coup plot and subsequent change of military government in 1975 • Failed Coup plot, assassination of military head of state, and subsequent installation of a new military head of state. • Handover from military to civilian rule-installation of civilian president in 1979 • Coup plot and subsequent re-installation of military government in 1983 • Coup plot and change of military government in 1985.
Economic fluctuation	2	• Oil boom which led to a annual GDP growth of about 6.2% between 1970 – 1978 • Economic downturn as “oil glut” hit in 1981
Bank Entry	25	Entry between 1970 and 1985 was driven by a combination of a mandate to establish branches in rural areas, indigenization policies, and an oil boom which expanded the national budget.
Bank Exit	1	One merchant bank exited the industry

Liberalization period (1986-1992)

As economic liberalization became a popular developmental strategy amongst developing countries in the 1980s, Nigeria was not left behind. Thus in 1986, under a newly installed military government, and the recommendation of the World Bank, Nigeria embarked on the most ambitious economic programme of its history: Structural Adjustment Programme (SAP). Although the programme was recommended by the World Bank, the design and implementation was carried out by the Federal Military Government of Nigeria. The main objectives of the SAP were: liberalization of external trade, payments system, and exchange controls; elimination of price controls and commodity boards, deregulation of interest rate, currency devaluation, and general reduction of the public sector activities (NCEMA, 2003, p.8; Lewis and Stein, 1997). In other words, SAP was a long term programme aimed at shrinking public sector activities and loosening regulation in a view to enhance private participation and promote competition in the economy.

In the banking industry, implementation of SAP (1986-1987) came in the form of relaxing barriers to entry; loosening regulatory instruments – interest rate on lending and savings; liberalising foreign exchange dealings of banks; privatization of banks and insurance companies (Lewis and Stein, 1997). A direct and nearly instant response to these policies was a rapid expansion in financial services (Brownbridge, 1996; Ezeoha, 2007; Lewis and Stein, 1997). An outright surge in banks was experienced, as 9 banks (5 commercial and 4 merchant banks) emerged between 1986 and 1987. This trend continued all through to 1992, as number of banks increased amazingly from 41 in 1986 to 120 in 1992 (roughly 300% increase in 7 years).

Figure 2.10 Changes in the number of banks (1986-1992)

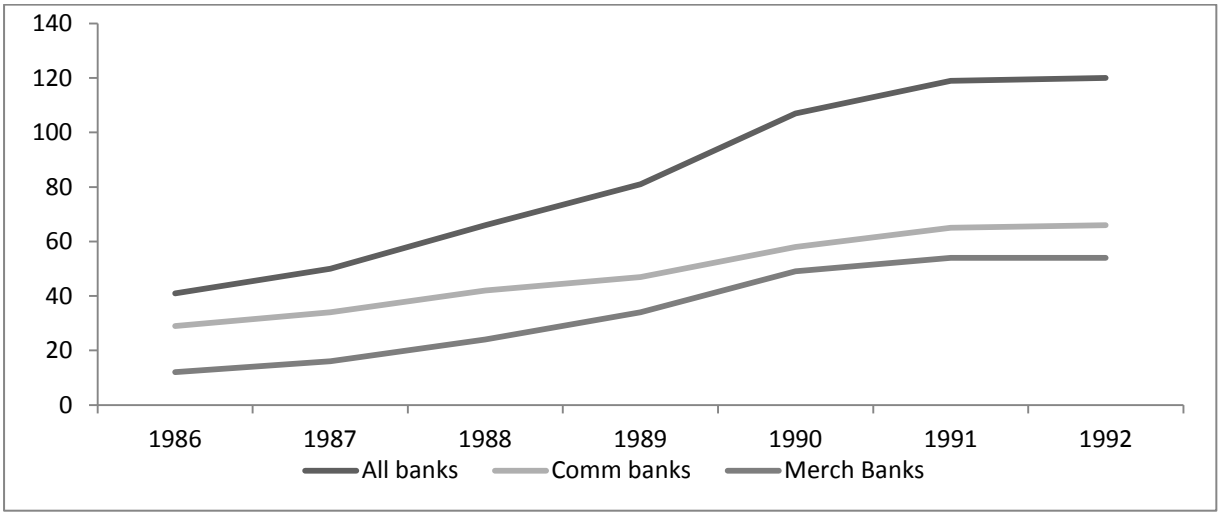


Figure 2.10 shows the growth in number of banks between 1986 and 1992.In comparison with Figure 2.9, the slopes of the lines in Figure 2.10 are generally steeper. It could also be observed, that slopes of the line for merchant banks is evidently steeper than that of commercial banks in Figure 2.10, implying that merchant banks were seemingly driving the growth in the industry. One may ask at this point, what are the reasons or incentives behind the rapid expansion of the banking industry in response to the liberalization policies? In Nigeria's case, the answers to this question transcend economic and financial thoughts, as politics and corruption played a huge role in banking activities in this era.

From an economic point of view, a combination of unrestricted entry into a market, no price floors or ceilings, and differentiated products, would result in some form of oligopoly which is typically characterised as having many buyers and sellers. It is therefore expected, that in the midst of low barriers to entry in to the banking industry, deregulated interest rate on lending and saving, and liberalized foreign exchange market, incentives for rent-seeking through high interest lending and arbitrage opportunities in the foreign exchange markets would be on the rise (Ningi and Dutse, 2008). In Nigeria's case, the incentive for rent seeking in the industry was high enough to cause a significant migration to the sector, leading to the explosion of firms offering banking services (Lewis and Stein, 1997). The industry was highly lucrative, as new banks often had returns on gross investment of about 300% (Lewis and Stein, 1997; World bank, 1994). The industry therefore witnessed rapid entry of players in search of abnormal profits.

The implementation of the economic liberalization policies of SAP was not free of politics and corruption. Bank licenses were awarded by the Federal Ministry of Finance, on approval of the military head of state (Lewis and Stein, 1997; Brownbridge, 1996). Thus bank regulation was highly politicised. Retired military officers served on the boards of most the banks, operating in what Lewis and Stein (1997) characterised as "diverse patron-client and crony network". In other words, the head of the military government patronises his subordinates with attractive but undeserving positions in order to protect their mutual interest and sustain the regime (Boone, 2005; Lewis and Stein, 1997). Thus appointments on management boards was not made on the basis of qualification or experience, but offered to both military and civilian elites with strong ties to the Military Head of State. The situation harboured unethical practises such as "round tripping", "insider lending", pyramid schemes, check kiting, and duplicate bookkeeping became rampant in the industry (Lewis and Stein, 1997). But of greater consequence, was the practise of "insider lending" where the management issued loans to themselves and their cronies without much scrutiny.

The early stage of the banking boom was not accompanied by a rise in regulatory activities by the central bank. There was therefore an imminent need to boost regulatory activities at the time. The Government responded to this by setting up the Nigeria Deposit Insurance Corporation (NDIC) under Decree No.22 of 1988, to assist the central bank in supervising banks (NDIC, 1989). In the same year, the Federal Government, in an effort to establish a "liquidity squeeze" programme in order to tackle inflation, ordered the transfer of all Federal and State ministries funds from commercial and merchant banks to the Central Bank of Nigeria. An immediate response to this policy was a sharp decline in deposits of banks and a subsequent plunge of some banks into liquidity crises (NDIC, 1989). However, this development did not affect bank entry as 17 new banks were established in the same year.

Table 2.6 Volatility in Liberalization period (1986-1992)

Form of volatility	Number of cases	Outline
Policies/Regulation/legislation	7	• An economic liberalization programme, Structural Adjustment Programme (SAP) was established in 1986 • A second regulatory body, NDIC was set up in 1988 • Withdrawal of government ministries' deposit in commercial and merchant banks in 1989. • New paid-up capital requirement – Commercial banks minimum share capital was increased from ₦10 million to ₦20 million; while that of merchant banks was raised from ₦6 million to ₦12 million in 1989. • Issue of Stabilization Securities (SS) – a liquidity squeeze strategy in 1989. • Bank and Other Financial Institutions Decree (BOFID) of 1991 was passed. The Decree vested more powers on the CBN. • New share capital requirement – Commercial banks minimum share capital was increased to ₦50 million; while that of merchant banks was raised to ₦40 million in 1991.
Political/leadership/civil distortions	2	• "SAP" riots were held in 1989. The programme was getting unpopular among Nigerian masses. • Failed coup attempt in 1990.
Regulatory agency intervention in banks	2	• The boards of directors of 11 banks were dissolved and reconstituted in 1990. • On the recommendation of the regulatory agencies, the Technical Committee on Privatization and Commercialization(TCPC) scheduled the sale of government shares in 12 banks
Economic fluctuation	2	• Gulf crises led to rapid rise in oil prices which gave huge revenues to Nigeria in 1990. • Sharp decline in the value of the naira in 1992
Bank Entry	79	High levels of migration to the bank industry due to profit making opportunities made available as a result of liberalization policies.
Bank exit	1	International Bank for West Africa Ltd exited the industry in 1990.
Change of name/status	1	• BCCI (Nigeria) limited changed its name to African International Bank (A.I.B) Limited in 1991. The directors of AIB relieved the appointment of all expatriate staff.

The year 1991 marked a gradual shift towards re-regulation, as the Bank and Other Financial Decree No.25 was passed. The decree vested more powers on the Central Bank by transferring regulatory activities such as licensing from the Federal Ministry of Finance to the CBN (Brownfield, 1996; NDIC, 1991).The same year also witnessed an additional entry of 12 banks into the industry.

Banking Crises (1993 – 2003)

In 1992, signs of distress were apparent in the industry. Bad debt to shareholders funds ratio of most merchant banks were up to 200%, and that of commercial banks rose from about 500% to 2,300% in some cases (Lewis and Stein, 1997; NDIC, 1993). A combination of ineffectiveness in supervision, unethical practices by banks, and macroeconomic instability were the major drivers of the distress condition (Lewis and Stein, 1997). Also, a failed transition to civilian rule in 1993 as a result of annulment of elections led to widespread tensions which resulted in temporal closure of many enterprises including banks. The same year also witness a transition to civilian rule, and another transition back to military rule[6].

It was therefore not surprising that in 1993, the financial conditions of banks started to worsen. 5 banks had their management taken over by the CBN, who subsequently constituted an Interim Management Board (IMB) for each for each of the banks (NDIC, 1993). Despite these conditions, a bank entry was witnessed as Stanbic Merchant Bank started operations in 1993.

The condition did not get any better in 1994, as the year witnessed the closure of 4 banks and the suspension of the license of 2 banks. The Federal Government, under the rule of a newly established and allegedly strict military government, promulgated the Failed banks (Recovery of Debts) and Financial Malpractices in Banks Decree No. 18 of 1994 (NDIC, 1994). A rather hash decree which holds the management and staff members of failed banks responsible for the failure, and therefore required to face the full force of law (NDIC, 1994). Arrests, trails, jail sentences, and debt recovery practises swept the industry. The result of this was a general panic and loss of confidence in the industry which deepened the already worsening financial conditions in place. Thus in 1995, the industry was heading towards a state of collapse. 28 banks were distressed, 1 completely shut down, and the CBN took actions ranging from constituting supervisory boards to outright take-over of the management of some banks (NDIC, 1995). On a different note, the new military government reversed the key policies implemented under SAP by fixing interest rates on lending and pegging the official exchange of the Naira. This marked a major departure from liberalization to strict government control of the economy.

The chaos in the banking industry continued in 1996, but in 1997, the general macroeconomic environment started to improve.GDP growth and a substantial decrease in inflation rate was witnessed. The CBN gained more powers in the supervision of a wider range of financial institutions,

[6] 1993 was a dramatic year in Nigeria's history. The year witnessed a major election and its subsequent annulment, a transition to civilian rule, and yet another transition to military rule. Widespread tensions and panic spread in all sectors of the economy.

while NDIC gained autonomous status in executing its role in distress resolution and liquidation. The minimum paid-up share capital of banks was raised, and Government approved the liquidation of banks that could not recapitalise by 1998 (NDIC, 1998). The year 1998 witnessed the closure of 26 banks which were initially distressed. The CBN also gained autonomous powers and therefore achieved complete independence from the Federal Ministry of Finance. The year also witnessed a shock in country's leadership following the sudden death of the military head of state, and subsequent instalment of another military head of state. Elections were held the following year, and the country successfully established civilian rule.

Table 2.7 Volatility during the banking crisis period (1993-2003)

Form of volatility	Number of cases	Outline
Political/leadership/civil distortions	5	• Annulment of presidential election and the subsequent appointment of an Interim National Government resulted in widespread tensions which led to the temporal closure of enterprises in 1993. Also rapid deposit withdrawals were experienced in banks. • Transition to civilian rule by the appointment of an Interim Governing Council (IGC) in 1993. • IGC was overthrown by the military in less than 2 months, to re-establish a military government in 1993. • Sudden death of military head of state, and subsequent installation of a new military head of state in 1998. • Successful transition to civilian rule through elections in 1999.
Policies/Regulation/legislation	9	• The newly established military government promulgated Failed Banks and Financial Malpractice in Banks Decree No.18 of 1994. • Establishment of Financial Services Coordinating Committee (FSCC) in 1994 to harmonise regulation within regulatory bodies. • Monetary and Credit Policy Guidelines of 1995 fixed the minimum lending at 21%, and a maximum spread of 7.5%. • Introduction of the Autonomous Foreign Exchange Market (AFEM) in 1995 – exchange rate was fixed at ₦22 to US$1 • CBN Decree No. 24, BOFID No. 25, and NDIC decree No. 22 of 1988 were amended in 1997 – autonomous status granted to NDIC. • CBN Decree No. 37 of 1998 gave operational autonomy to the bank – Putting an end to the requirement of reporting to the Federal Ministry of Finance. • The minimum paid-up share capital requirement of banks was raised to a uniform level of ₦500 million in 1998 • The paid-up capital requirement for new banks was raised to ₦1billion, while that of existing banks remained the same in 2000. • Universal banking commences in 2001
Regulatory agency intervention in banks	2	• The management of 5 banks was taken-over by the CBN in 1993 – Subsequent constitution of an Interim Management board (IMB) for each of the banks. • CBN took over the management of 1 bank in 2003, following its distressed condition.
Bank Entry	1	Stanbic Merchant Bank commenced operation in 1993.
Bank exit	36	• 4 banks exited the industry in 1994 • 1 bank exited the industry in 1995 • 26 banks exited the industry in 1998 • 3 banks exited the industry in 2000. • 1 bank exited the industry in 2002. • 1bank exited the industry in 2003
Change of name/status	6	• Meridian Equity bank Ltd changed its name to Equity Nigeria Bank Limited in 1995 • 13 merchant banks converted to commercial

		banks in 2000 • 4 banks changed their names in 2000 • 12 banks changed their names in 2001 • 6 banks changed their status to a public limited liability company • 1 banked changed its status from a merchant bank to a commercial bank.

The newly established civilian rule eased out the unfavourable financial conditions. New bank entries occurred in 2000 and 2001. Despite the moderate improvements in the system, 5bank closures were witnessed between 2000 and 2003.

Consolidation period (2004-2005)

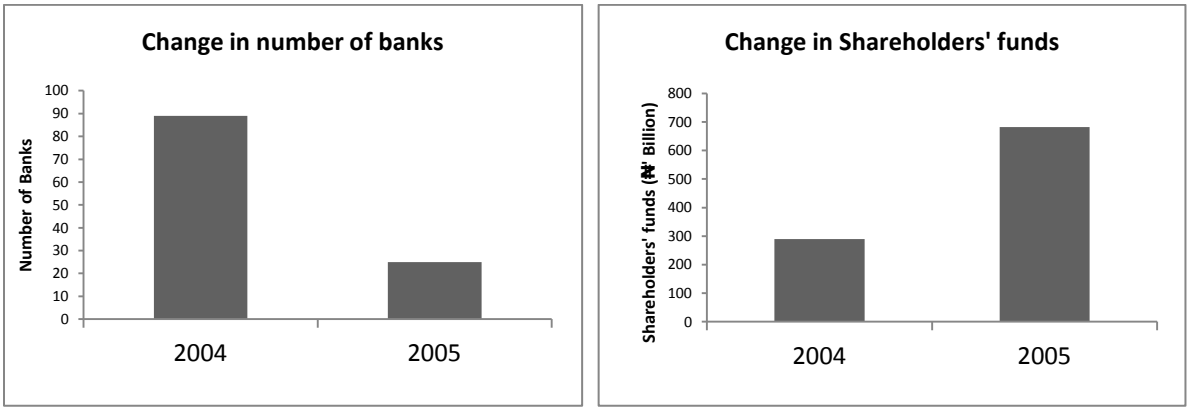
The appointment of a new governor of CBN in 2004 opened opportunities to undertake reforms in the chaotic banking industry. The CBN noted that as of the end of March, 2004, out of 89 banks operating in the country, 62 of them were sound, 14 were considered marginal, 11 were deemed unsound, and 2 banks delivered no returns (Soludo, 2004). In a rather ambitious move, the Central Bank, on July 2004, announced an increase in minimum share-capital required for eligibility to operate, from ₦2 billion to ₦25 billion with full compliance before 18 months from the date of announcement. The apex bank advocated for consolidation of the industry through mergers and acquisition. The reason for the radical twist was that a bigger capital base will lead to economies of scale, more efficient allocation of resources, and risk reduction as a result of improved management (Soludo, 2004).

Following the announcement, the banks were plunged into a desperate pursuit for survival. The options employed by banks included: sourcing for fresh capital through initial public offers, private placement and right issues; transfer of reserves to capital; mergers between compatible banks; acquisition of smaller banks by bigger banks; or combining any of the strategies (Ningi and Dutse, 2008, p.36; Otanngaran, 2004).However, with the limited time given to capitalize, inability to find merger partners/acquirers faced by some banks, the consolidation reform resulted in the closure of 14 banks. A total of 25 banks emerged from 75 banks as a result of merger/acquisition activity.

Table 2.8 Volatility in Consolidation period (2004-2005)

Form of volatility	Number of cases	Outline
Policies/Regulation/legislation	1	Consolidation programme – Banks required to have share capital at least ₦25 billion in 2005.
Bank exit	14	Banks that could not meet the capitalization requirement exited the industry in 2005
Bank Mergers & Acquisitions	21	25 banks emerged from the M&As of 75 banks in 2005

Figure 2.11 Major Changes due to consolidation of the banking industry



The enforced consolidation exercise brought about dramatic changes in the industry. Figure 3 shows that the number of banks decreased by 356% while adjusted shareholders funds increased by 235% (NDIC, 2005). Thus the increase in capital base of banks which was the primary reason for the consolidation was achieved. Another remarkable effect of the consolidation was that it deepened the capital market. Other significant outcomes include significant fall in interest rates, greater access to credit from foreign banks, ownership structure of banks became less concentrated, improvement in depositor confidence, and economies of scale in operations (CBN, 2010).

Post Consolidation period (2006-till date)

The following years after consolidation saw positive developments in the industry. Of particular interest is the increase in foreign participation in the industry. In 2006, 13 banks initiated strategic alliances/partnerships with foreign banks for the management of external reserves of the Federal Government (NDIC, 2006). Thus 16 out of 25 banks in the industry had foreign ownership (NDIC, 2006). The industry was leapfrogged into a boom which saw rapid expansion of range of services offered, as well as branch network. A further 74% increase in shareholders' funds occurred between 2006 and 2007(NDIC, 2007). An additional merger of two banks occurred in 2007, bringing a reduction in the number of banks to 24 (NDIC, 2007). On a different note, the post consolidation surviving banks were given the opportunity to acquire the assets and assume the liabilities of the banks that failed as a result of the imposed consolidation reform. 3 capitalized banks took over the assets and liabilities of 4 closed banks in 2006, and 4 banks acquired the assets of 10 closed banks in 2007(NDIC, 2006, 2007). At this stage, the consolidation was viewed as a success. Nigerian banks accounted for more than 65% of stock

market capitalization, total assets rose by 439%, and bank branches in foreign markets rose to 43 (Atuche, 2009; Chiejine, 2010).

In 2008, the global economic crises brought about significant effects on Nigerian economy. Due to a general fall in demand for oil, the price of oil plummeted. Nigeria, being a country with 80% of its government revenue coming from oil, started to witness a general fall in aggregate demand. The fall in price of oil revenue in Nigeria was also accompanied with a fall in production as a result of the Niger Delta crisis (Atuche, 2009).In the banking sector where most of the credit is channelled towards the oil and gas sector, due to its speedy return on investment, the issue of non-performing loans started to surface in some banks. The capital market, which was driven by the banks for about 3 years prior to the global economic crisis, was in a state of collapse. Foreign investors, aware of the grim outlook of the industry, began divesting. Despite these events, the regulatory bodies claimed that the banks were not affected by the global economic crisis.

In 2009, under the directives of a new CBN governor, 8 banks had their executives and boards sacked by the apex bank for unethical practises (Atuche, 2009). The CBN revealed that the banks were in a state of insolvency and subsequently bailed out the banks by injecting a sum of ₦420 billion into them (CBN, 2009). This led to era of bank reforms with emphasis on ensuring good corporate governance and risk management.

Table 2.9 Volatility in post consolidation period (2006 - till date)

Form of volatility	Number of cases	Outline
Political/leadership/civil distortions	1	First transition from civilian rule to another civilian rule in 2007.
Policies/Regulation/legislation	1	Banking reform aimed at boosting corporate governance and risk management practices in 2009.
Economic fluctuation	1	Global economic crises resulted in plummeting oil prices, and thus substantial reductions in federal government revenue in 2008.
Regulatory agency intervention in banks	1	The CEOs and boards of 8 banks were sacked and replaced by the CBN. A total of ₦420 billion was injected into the banks.
Bank Mergers & Acquisitions	1	2 banks merged in 2007

Discussion: Searching for a pattern

Table 2.10 Associating changes in banking industry with different events

Period	Changes in Banking industry	Number of cases	Political/leadership/civil distortions (Number of cases)	Policies/Regulation/legislation (Number of cases)	Economic fluctuation (Number of cases)
Post Independence period 1960 - 1985	Bank Entry	25	9	7	2
	Bank Exit	1			
Liberalization period (1986-1992)	Bank Entry	79	2	7	2
	Bank exit	1			
	Regulatory agency intervention in banks	2			
Banking crisis period (1993-2003)	Bank Entry	1	5	9	
	Bank exit	36			
	Regulatory agency intervention in banks	2			
Consolidation period (2004-2005)	Bank exit	14		1	
	Bank Mergers & Acquisitions	21			
post consolidation period (2006-till date)	Bank Mergers & Acquisitions	1	1	1	1
	Regulatory agency intervention in banks	1			

In this sub-section, an attempt is made to discuss the changes that occurred in the Nigerian banking industry in the context of political distortion, legislation, and economic fluctuation. The discussion is not

aimed at establishing causation, but rather to explore the concurrent events under which these changes occur. Thus this section investigates the conditions which are more prominent in the midst of changes in the banking environment. We eliminate the colonial period from this analysis mainly because the information available is not sufficient to determine the prominent events.

Table 8 reveals that most significant occurrence of bank entry was in the midst of substantial cases of political distortions, legislation, and economic fluctuations. The highest case (liberalization period) occurred in a period cases of legislation surpassed that of political distortion within a relatively short period of time. However, political distortions were also prominent in periods of bank entry as it came to a halt when the distortions normalised after 2003. In the case of bank exits, the most apparent conditions seem to be legislation. The highest occurrence of exits (Banking crisis) was in the midst of higher cases of legislation than political distortion. Also, it is apparent that a single legislation (Bank consolidation) occurred in the same period with 14 cases of bank exit[7]. Political distortions were also prominent during bank exits as 5 of such distortions occurred in the midst of the highest case of bank exit.

Regulatory interventions seem to occur mainly in the midst of political distortion and legislation, but the legislation seems to be more prominent. It is quite obvious from Table 8, that the few cases of Mergers and Acquisitions occurred in the midst of legislation. Political distortions, legislation, and economic fluctuations were negligible during periods of significant M&As. This section therefore concludes that the orders of magnitude of events which are simultaneous with changes in the banking industry are: legislation, political distortions, and economic fluctuations.

In summary, the Nigeria banking industry has undergone different forms of changes. These changes are driven by different factors which this section has attempted to highlight. This work has explored the industry from the colonial period to the recent events such as the recent bank consolidation. A documentation of different forms of volatility was outlined, in an effort to link them with observable changes in the industry. Thus we therefore advocate for some degree of caution while analysing Nigeria banking industry, due to issues of the context of the operating environment.

[7] It has been established that the bank consolidation reform led to the exit of 14 banks in the industry (NDIC, 2006)

2.7 The manufacturing and banking sectors: A significant contrast

The two sectors in focus in this study show significant differences in many aspects. By definition, these two sectors are different as manufacturing is an aspect of industrial production which involves the use of capital, labour, and other inputs to produce goods; banking involves the provision of services such as accepting deposits and providing credit to the real sector. But there are similar in the sense that they both involve the use of inputs to produce outputs which are both measurable. Development scholars posit that the dominance of either the manufacturing or banking industry depends on the stage of development of a country. Thus economies in the industrial stage of development are expected to be inclined towards manufacturing, while developed countries are usually in the knowledge stage of development where the services industry such as banking are amongst the most thriving (Sachs, 2004).

However, the Nigerian economy, a developing economy, stands an a interesting case where the banking industry is fairly developed, with considerable implementation of state of the art technology in its operations; and in contrast, the manufacturing sector is still in its infant stage, engaged in the production of light technology industries such as Food processing and Textiles. The gap between the banking and manufacturing sectors have also increased as the share of GDP in the manufacturing sector is declining rapidly while that of banking has been on a remarkable rise. The two sectors are both affected by the tough business climate of Nigeria, but differ in their respective prominent problems faced. While the manufacturing sector faces the challenges of power outages, poor transportation network, and shortage of know-how; the banking sector has been plagued with issues of political expediency, corruption, and policy overturn over time.

Government regulation or intervention in the two sectors also differs in magnitudes. The banking sector of Nigeria has experienced frequent changes in legislation due to the reoccurring need to control unethical practices, political influence on the industry, and also to meet the global state-of-of the art operating level. Another reason for high regulation of the industry is due to the sensitivity of the industry, as it deals with the deposits of the Nigerian masses that rely on Government to provide protection from the imminent excesses of the operators. The manufacturing sector however has not been successful in capturing the attention that warrants for increased Government regulation, due the fact that most of the firms in the sector are small firms which cannot be properly regulated. Despite the existence of government agencies such as Manufacturers Association of Nigeria, Bank of Industry, Nigerian Industrial Development Bank, and National Bureau of Statistics, data on manufacturing firms in

Nigeria is of very poor quality. This could be as a result of the fact that the small firms that dominate the industry, do not keep appropriate records that government agencies require; or the gross ineffectiveness of these agencies in conducting surveys in order to generate data on manufacturing firms. However, surveys from international agencies such as the World Bank, and United Nations Industrial Development Organisation (UNIDO) have made efforts in providing data on Nigerian manufacturing through surveys. These surveys can only permit limited academic and non-academic analysis or investigation, but not sufficient for Government monitoring and regulation. Thus the result is the regulation of Nigerian manufacturing firms are most among large size firms but the vast majority of small firms are sparingly regulated.

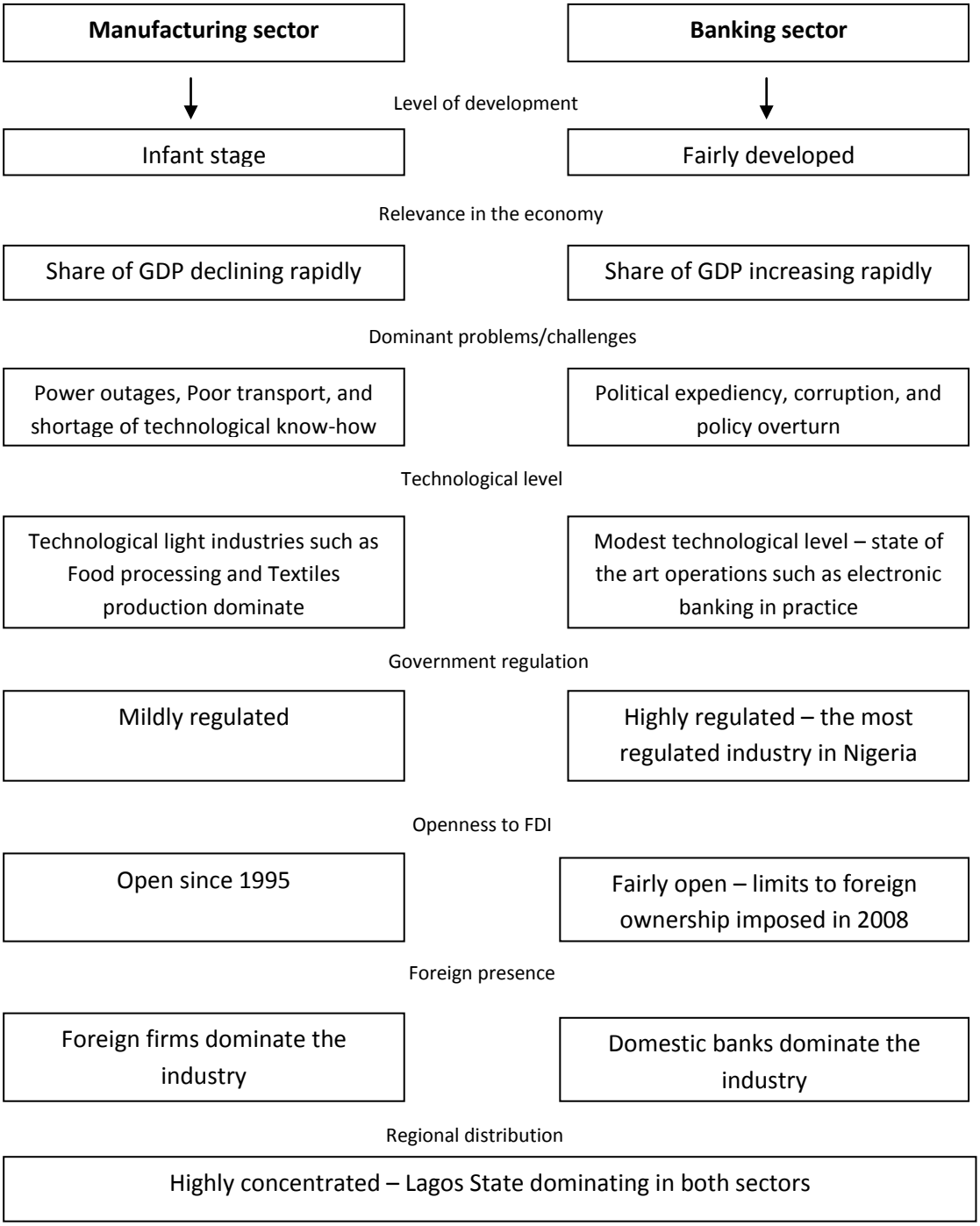
Another aspect of considerable difference, which is of particular importance to the present study, is their respective degrees of openness to FDI. Despite a history of various the degrees of restriction to FDI, the manufacturing sector has been "open" since the establishment of Nigerian Investment Promotion Commission in 1995. FDI in the sector is fully encouraged by the Federal Government, due to its ability to boost domestic investment, job creation, and potential spillover effects to domestic firms. This is in direct contrast to frequent Government protection policies such as import substitution through trade restriction. Thus the manufacturing sector is completely open to FDI, but not international trade as it undergoes frequent policy overturns on import restriction. Restrictive policies towards FDI do occur at different periods in the banking industry. The most recent is the 20% limit on foreign equity participation imposed in 2007 by the Central Bank of Nigeria, in order to protect the booming industry from foreign control or dominance (NDIC, 2008).

Foreign presence in banking and manufacturing sectors also differ considerably. Partly due to the challenging business conditions, which imply high costs of operation, manufacturing sector of Nigeria are dominated by large MNCs which have the capacity to absorb the operating conditions due to economies of scale. Small indigenous firms are faced with high costs of production; frequently exit the industry, resulting in the dominance of high capacity MNCs in the industry. Thus Nigeria Breweries Plc, Nestle Nigeria Plc, and Unilever, which are MNCs engaged in Food processing, dominate Nigerian manufacturing (UNCTAD-WID, 2008). In contrast, the banking sector is dominated by indigenous banks like Fist bank Nigeria Plc, United Bank of Africa (UBA), and Zenith Bank of Nigeria, dominating the industry share capital, and majority-owned foreign banks like Standard Chartered Bank and Stanbic-IBTC lagging behind them in terms of share capital.

The most evident common ground of the two sectors is their regional concentration. Manufacturing firms and banks are mostly concentrated in the commercial and economic hub of Nigeria, Lagos. Both manufacturing and banks respond to varying differences in magnitude of economic activity in different regions in Nigeria.

In conclusion, Nigeria as a country in focus is quite dynamic in wide-ranging aspects and in different sectors. The relevance of the sectors in focus differs, as well as their positions as potential locations for FDI. The manufacturing sector constitutes a lower share of GDP than the banking sector, and it is also less dynamic in general. Thus these differences may also manifest on the impacts of foreign presence on the productivity/performance of firms in their respective sectors.

Figure 2.12.Comparing Manufacturing and Banking sectors



Chapter 3: FDI and policies

3.1 Introduction

The relevance of FDI in the global economy has made it a significant agenda in policy making for national and regional governments. The remarkable surge in FDI has various policy implications. Despite the rather consensus view that FDI is good for both the global economy, and national economies, policies on FDI are not directed solely towards its promotion. Thus the dynamics of FDI can also be viewed from a policy perspective. The two broad directions of FDI policies are towards liberalization and restriction or control. On the national level, decisions on whether to control or liberalize FDI the country's economic agenda, the perceived effect of FDI in terms of social and political perspectives, and in recent times, issues of national security.

This chapter highlights the trend of global policies, pointing out the prolonged periods of FDI liberalization policies and the re-emergence of protectionism and restrictions. It also highlights the key policies made by the Nigerian government that affect FDI flow to the country, and its alignment with global FDI policies. The unavailability of sector specific information on FDI policies in Nigeria implies that a holistic view will be taken in description.

3.2 Global trends in FDI policies

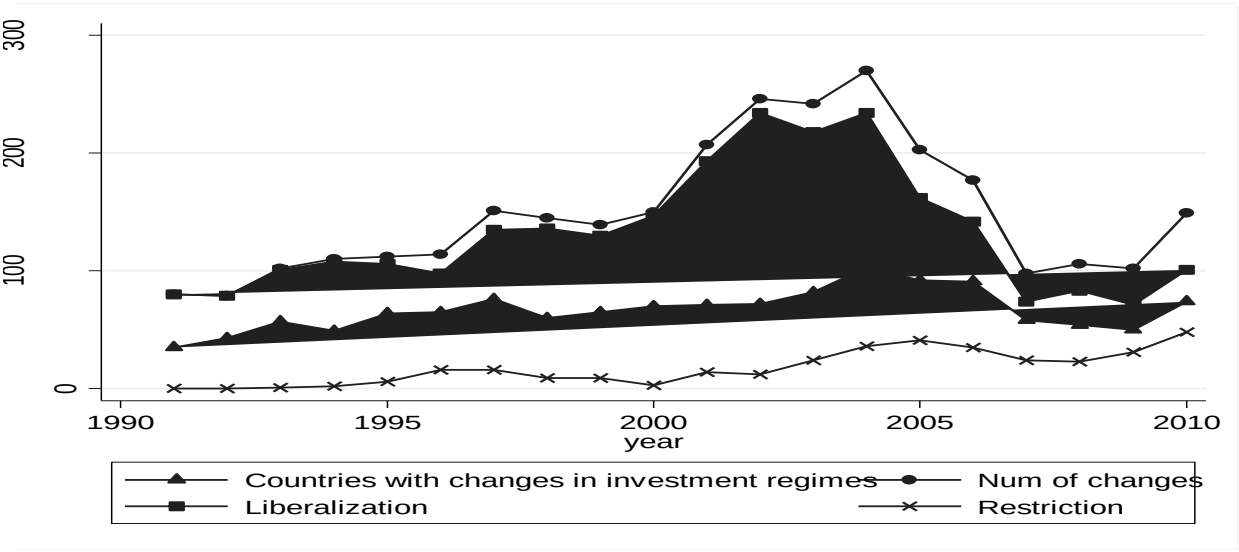
The significant upward surge in FDI, which began in the mid 80s sparked interests due its contributions to global economic growth and prosperity. Multinationals became more influential in world affairs, gaining relevance beyond that of many national governments in the world. As a result, national governments and international bodies have paid close attention to the operations of MNCs in order to point out their benefits and demerits. On the international realm, the widely held view is that FDI is beneficial to both home and host countries, and therefore should be liberal with policy formulations leaning towards providing incentives for it. On the other hand, weariness and caution about its long term implications in host countries have spurred various degrees of regulatory control by national governments at different points in time.

The eighties came with the liberalization wave which was propped by international agencies such as IMF and the World Bank, as a means of achieving efficiency in institutions by shrinking the public sector and

boosting the private sector, which also entails opening up for FDI and competition. This saw significant number of countries, especially developing countries, converging on common standards such as rights of establishment, fair treatment, and protection from nationalization, among others (UNCTAD-WIR, 1993). Investment promotion agencies (IPAs) sprang up in different countries, and a race towards the attraction of FDI through conviction of locational advantages became prominent in developing countries in the nineties. Major drivers of the liberalization initiative were regional integration of countries in Europe, the adoption of free market economy systems by Central and Eastern Europe, and a general consensus that FDI brings about huge benefits (UNCTAD-WIR, 1991, 1992, 1993). Leading the liberalization trend are Central and Eastern European countries and African countries who offered various incentives in all aspects of FDI between the 1980s and early 90s (UNCTAD-WIR, 1995). A typical example of FDI investment promotion policy is Namibia's Foreign Investment Act of 1990, which made the country open to FDI in all sectors.

Developments in world trade policies have also affected FDI policies over time. The completion of the Uruguay round negotiations and the subsequent establishment of the World Trade Organization (WTO) brought about significant consequences on FDI. Such laws within WTO that affect FDI policy instruments include Trade-related investment measures (TRIMS), General Agreement on Trade and services (GATS), The Agreement on Subsidies and Countervailing issues, and Trade related intellectual property rights (TRIPS), among others (WTO, 2005; Bartels and Crombrugghe, 2009). Thus trade measures such as Regional free trade agreements and Export processing zones are likely to result in promotion of FDI in member countries, and induced export-oriented FDI respectively (UNCTAD-WIR, 1992, p. 268). Particular regional trade agreements with FDI promotion implications include North American Free Trade Agreement between Canada, Mexico, and the United States; and Charter on Regime of Multinational Industrial Enterprise (MIEs) in the Preferential Trade Area for Eastern and Southern African States (UNCTAD-WIR, 1996, p. 138).

Figure 3.1 Changes in FDI policies over time (1992-2010)

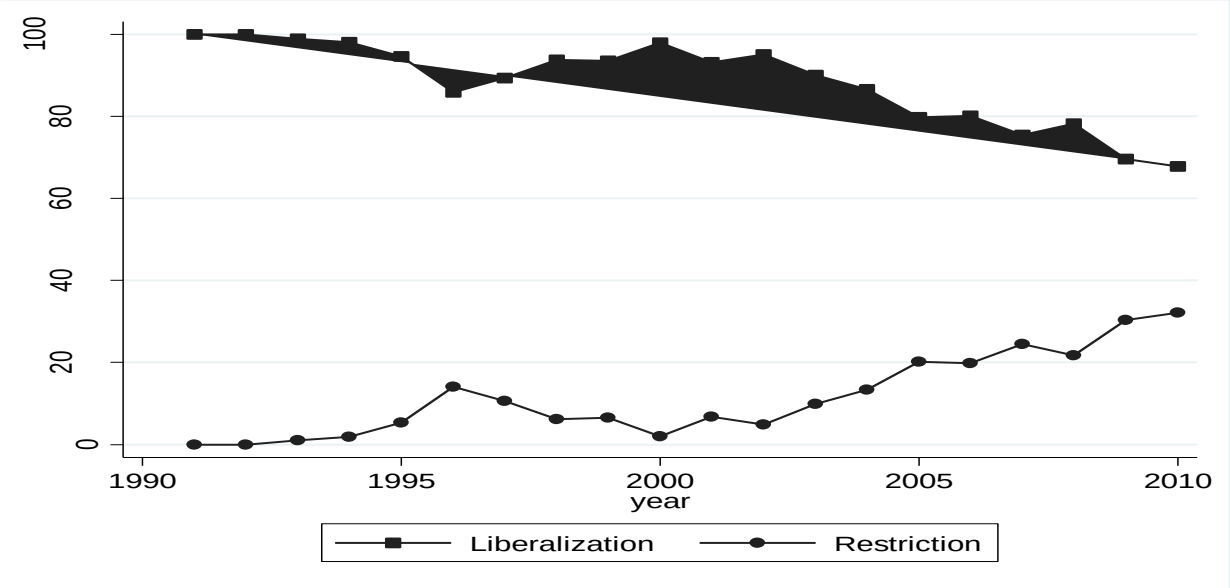


Source: UNCTAD – various issues

The global liberalization era lasted for the majority of the past three decades. It is important to note that the major promoters of FDI liberalization are industrial countries, who benefit more than developing countries as both source and host countries for FDI. Developing countries, however, were mostly host countries for MNCs. Thus despite the wide-spread conviction of the economic benefits of FDI, some developing countries had reservations about being open to all forms of FDI due to their views of possible negative effects, especially on social, cultural and political lines. Figure 3.1 shows that most of the global changes in FDI policy between 1990 and 2004 were leaned towards liberalization, as the plot of liberalization line follows that of number of changes very closely. But 2005 saw a huge drop in liberalization policies as weariness over the effects of FDI began to emerge in different parts of the world. It comes as a surprise that the drivers of the fall in liberalization policies and the consequent rise in restriction laws are the industrial countries that spearheaded the liberalization wave in the past decades. The protectionist wave was partly brought about by the events that followed after 11th September 2001 terrorist attack on United States, which to the emergence of protectionist on national security grounds. United States, Canada, Germany, Russia, and China, were among the countries that enacted laws that restrict various forms of FDI due to national security reasons (Marchick and Slaughter, 2008).

The emergence of Sovereign Wealth Funds (SWFs) as a major form of FDI by mostly oil rich countries of the Middle East can be linked to the recent control measures on FDI by developed countries. The idea that ownership of major assets in the industrial world would be owned by state governments of foreign countries in the form of SWFs was greeted by a lot of caution and sometimes suspicion (Marchick and Slaughter, 2008; Bartels and Crombrugghe, 2009). Thus this contributed to the emergence of control measures on FDI from developed countries who preached the benefits of total liberalization some decades earlier. Thus the present situation is that of declining liberalization policies and rising restrictive policies towards FDI. Figure 3.2 shows that from the nineties, there has been a gradual decline in the percentage of policy changes leaned towards liberalization and a concurrent gradual rise in restrictive policies. Thus like some macroeconomic variables such as regional economic growth, there is a growing likelihood of convergence of liberalization and restrictive policies.

Figure 3.2 Percentage shares of Liberalization and Restriction (1992-2010)



Source: UNCTAD – various issues

However, the growth of restrictive policies should not be over estimated, as the growth only covers come forms of FDI and those targeted at some particular sectors. Most restrictive policies are based on controlling operations rather than entry of MNCs (UNCTAD-WIR, 2011). Also, there is a growing need of restructuring policy instruments to reflect the complexities of MNC operations in recent times. Thus

policies should accommodate the complexities of intra and inter firm transactions, and international network systems of productions, sourcing, technology, and marketing (Bartels and Crombrugghe, 2009).

3.3 Nigerian government policies and FDI

Policies that affect FDI in Nigeria have been alternating between promotion and restriction of various degrees. The foremost FDI policies were enacted in the colonial administration, thus their economic interest was a major motivation. The Aid to Pioneer Industries of 1952 and Industrial Tax relief of 1958, were made to promote investments from both British and non-British MNCs. The later policy involves granting a 5-year tax relief on foreign companies on entry into Nigeria (Aremu, 2003). This development was soon overridden by desperate calls from Nigerian citizens to "nigerianize" the economy after independence in 1960 (Ekundare, 1972). The Exchange Control Act of 1962 came as the first post independence restrictive measure on FDI by prohibiting the transfer of money outside Nigeria without the consent of the Nigerian Federal Ministry of Finance. Thus the act went against the basic precepts of FDI liberalization: Assurance for the repatriation of earnings and capital (UNCTAD-WIR, 1993).

Of greater scale and intensity in terms of FDI restriction, was the Indigenization Decree which began with the enactment of Nigerian Enterprises Promotion Decree, No. 4 of 1972. This imposed ceilings on to foreign ownership of 60% on a total of 22 business activities, and minimum capital requirement. The business activities affected included advertising, electronic manufacturing, basic manufacturing, road transport, among others (UNCTAD, 2009). Further restrictions on foreign ownership came with the Nigerian Enterprise Promotion Decree of 1977, which lowered foreign ownership limit from 60% to 40%, and expanded the list of business activities restricted. The 1977 amended was know as the most severe cases of government control on foreign ownership in Africa and the developing world (Biersteker, 1987; UNCTAD, 2009). However, the amendment of the decree in 1989 led to the relaxation of some of the restrictions previously imposed, but the controls were still present at that time.

Part of the objectives of the Structural Adjustment Programme of 1986, was to privatize major public institutions in Nigeria, especially those of the oil sector. However, foreign investors were excluded from the privatization process, as indigenous Nigerian firms became the beneficiaries. The actual opening up of Nigerian economy to foreign investment came with the establishment of the Nigerian Investment Promotion Decree in 1995. According the Nigerian Investment Promotion Commission (NIPC) charter,

the decree mandates the commission to provide investment services such as investment promotion, investor relations, investment friendly policy advocacy; and to build associations with multilateral institutions such as UNIDO, Multilateral Investment Guarantee Agency (MIGA), Foreign investment Advisory Service (FIAS), amnong others. Thus Nigerian economy transformed from an rather FDI restrictive economy to an FDI promotion one, allowing up to 100% foreign ownership in many sectors, especially non-oil sectors (Kehl, 2009).

Further FDI promotion measures came with the National Economic Empowerment and Development Strategy (NEEDS) in 2003, which extended FDI promotion to include high profile Nigerians abroad and Africans in the Diaspora (UNCTAD, 2009). Table 2.1 shows a historical outline of policies that affected FDI in Nigeria in chronological order. It can be seen that the promotional measures started in the late 80s, after decades of government restrictions to FDI.

In general, the FDI policy upturns are not restricted to Nigeria, as this chapter shows that global policies have also moved from liberalization to gradual protectionism as national security concerns began to contribute to policy making. Thus considering the aim of investigating the effect of FDI in sectors, the changes in FDI policies would affect the magnitude or stock of FDI flows and thus affect their effects on both manufacturing and banking sectors.

Table 3.1: An Outline of FDI Policies in Nigeria

Year	Law/policy	Motive	Aim	Comments
1958	Pre-independence era: Industrial Tax relief		To grant a maximum of 5 year tax holiday from inception date, to foreign companies operating in Nigeria	This was a strategy to attract TNCs by offering generous incentives.
1962	Exchange Control Act, 1962	Restrictive measure	To ensure that all monetary transactions within and outside Nigeria are permitted by the Ministry of Finance	A politically motivated law to subdue the dominance of foreign companies after Nigeria's independence.
1972	Indigenization Era: Nigerian Enterprise Promotion Act (NEP)	Restrictive measure	To restrict FDI in enterprises. These schedules were put in place: Schedule 1 requires 100% ownership of enterprises by Nigerians while schedule II requires as much as 40% ownership by foreigners	Foreign investors were not adequately compensated for disposition of assets. Thus the implementation violated international investment laws.
1977	Nigerian Enterprise Promotion Act (NEP)	Restrictive measure	An amendment of NEP Act, 1972, which resulted in lowering the maximum limit of foreign ownership from 60% to 40%, and expansion of business activities under restriction.	
1979	National Office of Industrial Property (NOIP) Act	Restrictive measure	To scrutinize the technology coming into the country. This involved the promotion of foreign technology to priority areas, and protecting the negative effects of unwanted technology into Nigerian economy	
1987	Nigerian Enterprise Promotion Act (NEP)	Promotion strategy	An amendment of the NEP Act 1977, to provide an opportunity for foreign investors to increase investment without increasing their voting power	Due to the emergence of a separate body to monitor the compliance of the Act, it resulted in the development of "red tape" to foreign investors in Nigeria (Aremu, 2003).
1988	Industrial Development Coordinating Committee (IDCC) Act	Promotion strategy	IDCC was to act as a one-stop agency to approve and regulate investment in Nigeria (as recommended by	The agency underperformed due to dishonest practises, as enterprises gave false information to secure

			The World Bank). To streamline the investment procedure by shrinking similar government departments into one	expatriate quotas.
1989	Nigerian Enterprise Promotion Act (NEP)	Promotion strategy	To eliminate the discriminatory approach towards foreign investors that existed in previous NEP acts. Schedule I and II were abolished, and Schedule III was amended to allow ownership of enterprises with more than 20 million naira capitalization	A turn around amendment to open up to FDI
1990	Companies and Allied Matters (CAMA)	Promotion strategy	To mandate foreign companies incorporate outside Nigeria to incorporate in Nigeria. Failure to incorporate will lead to termination of the right to operate in the country	The law was basically a measure to ensure the documentation and monitoring of the activities of foreign firms by government authorities.
1995	Nigerian Investment Promotion Commission (NIPC) Act 16, 1995	Promotion strategy	To promote and direct investment in Nigeria. Also, to market the Nigerian investment environment to potential foreign investors	A more radical approach than previous IDDC act (Aremu, 2003)
1995	Foreign Exchange Monitoring and Miscellaneous Provisions (FEMAMP) Act	Liberalization	To liberalize foreign exchange transactions.	This was an amendment of the Exchange Control Act, 1962
1999	Investment and Securities Act	Liberalization	To deregulate the Nigerian Capital market, in order to attract FDI	The enforcement of the act required the amendment of other acts, to avoid the conflict of objectives

Source: Adapted from Aremu (2003)

Chapter 4: The theory of FDI and spillovers

4.1. Introduction

The theoretical underpinnings of the empirical investigation of FDI effects at the firm level originate from the theories of FDI. In particular, the notion of the existence of productivity spillovers from FDI is fundamentally based on the neo-classical trade theories and the theories of industrial organization. This chapter therefore throws light into the underpinnings of FDI spillover mechanism by exploring its links with the established theories of FDI.

This chapter highlights the neoclassical trade theories of Mundell (1957), which argue that restrictions on trade enhance factor movements from countries of lower return to countries of higher return. These capital movements across countries were regarded as direct investment (Kindleberger, 1969). However, we point out in the chapter, that the novel argument by Hymer (1960) that the differences on factor interest rates were not the reason for capital movements but rather the desire to undergo investments leads to capital movements. The theory also pointed out that the specific advantages possessed by a firm are the main motivation for direct investment, and that a direct investor operates in an oligopolistic market characterized by product differentiation. This contribution lead to the notion that productivity spillovers can occur when MNCs cannot fully internalize the ownership or specific advantages, and therefore a spillover to domestic firms in the host country would likely occur. We therefore provide a detailed overview of these theories and their links to productivity spillovers in both manufacturing firms and banks.

4.2 The theory of FDI

4.2.1. Neoclassical Trade theory

The initial attempt to explain the theory of FDI was made in the neoclassical trade theory. The trade theory known as the Heckscher-Ohlin[8] model gave the foundations for the formulation of FDI theory. The Heckscher-Ohlin (H-O) model essentially advanced on the Ricardian model by introducing a second factor of production, capital (Markusen, 1995). Specifically, the model is based on three key assumptions: The first is that there are two factors of production (capital and labour); secondly, two countries exist (for example country A and B); and two perfectly competitive goods are produced. Hence the H-O model is characterized as a "2x2x2" model. A basic departure from the Ricardian model is the assumption that technologies between countries are identical. Thus the main difference between countries in the H-O model is the difference in factor endowments. By implication, countries have different factor intensities and different factor prices. Furthermore, it is assumed that factors are mobile within countries, but immobile between countries.

To illustrate the H-O model, we assume two countries, A and B, where each produces two goods: a capital intensive good and a labour intensive good. A is the capital abundant country, and B is the labour abundant country. The H-O theorem asserts that country A will export the capital intensive good to country B while country B will export the labour intensive good (trade takes place). It is important to note that the due to difference in factor prices between countries, the price of the capital intensive good will be higher in the labour abundant country and vice versa[9]. Hence both countries will continue trading until the prices of the two goods are equal in both markets. The equality of price the two goods implies equality of the factors between the two countries, as price of factors are equivalent to their marginal products.

A significant departure from the H-O model to the FDI theory involves the relaxation of the assumption that factors are immobile between countries. Thus this makes provision for the fact that factor movements can also occur in the absence of trade. Mundell (1957) extends the analysis to argue that

[8] Heckscher-Ohlin model was developed by two Swedish economists, Eli Heckscher and Bertil Ohlin. Bertil Ohlin won the 1977 Nobel Prize in Economics.

[9] The capital abundant country will have an excess supply of capital, which results in lower price of capital relative to the labour abundant country.

restrictions to trade will enhance factor movements and vice versa. The factor movements will be in the form of movements from a country of lower return to a country of higher return. In the case of capital movements, firms will move to countries where the returns to capital are relatively higher, in quest for higher profits. The implication of Mundell's assertion is that trade and capital movements are substitutes. In summary, the difference in returns to capital between countries is the basic reason for capital movements from one country to another. This capital movement from one country to another was regarded as direct investment by neo classical economists (Kindleberger, 1969).

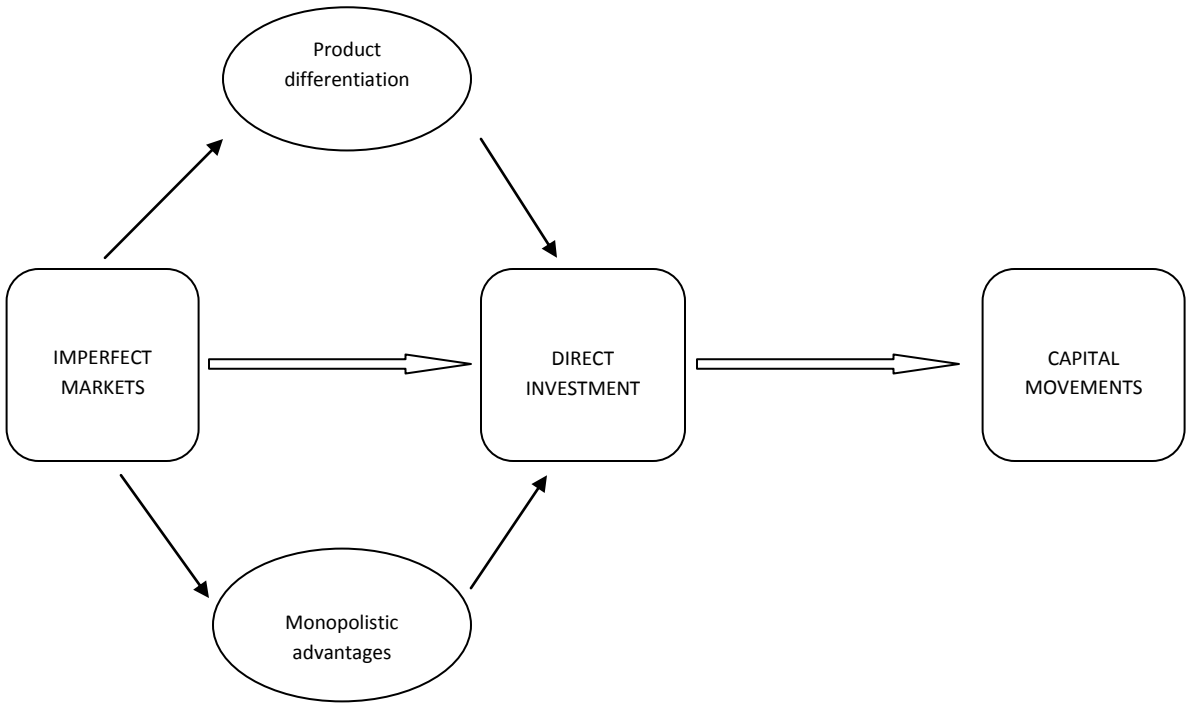
However, the neoclassical view towards FDI received criticism by some prominent scholars. In a doctoral dissertation, Hymer (1960) was the first to provide a credible criticism of the neoclassical theory of FDI. He questioned the notion that disparity in interest rates was the basis for capital movements; and that FDI would not exist in perfect competitive market. According to Hymer, direct investment is the control (indicated by the extent of ownership) of an enterprise of a country by an enterprise of another country which involves capital movements. And the desire to undergo direct investment leads to movements in direct investment which results in capital movements. This desire to undergo investment is the motivation for direct investment and not the differences in interest rates (Hymer, 1960). He noted that the evidence for this thought is seen in cases where capital moves from a country with high interest rate to a country with low interest rate. According to the neoclassical theory, the preceding statement would have been seen as counter intuitive. To contest the idea of perfect competition, Hymer noted that specific advantages which firm posses are the main motivation for direct investment. Thus Hymer views the direct investor as an oligopolist (Grubaygh, 1987; Sun et al., 2002). Therefore, imperfection in the market is a necessary condition for direct investment to exist.

In a similar vein, Kindleberger[10] (1969) elaborated on Hymer's theory, and explained the monopolistic advantages required for direct investment. He noted that local firms already posses some advantages which the foreign investor need to overcome. These advantages possessed by the foreign firm could be in the form of product differentiation, superior managerial and marketing skills, advanced technology, economies of scale, etc (kindleberger, 1969). Caves (1971) emphasized on product differentiation as a necessary condition for direct investment. He added that product differentiation stimulates rivalry through activities like advertising. Furthermore, he noted that in addition to the merits of the

[10] Prof. Charles Kindleberger was Stephen Hymer's thesis supervisor at the Massachusetts Institute of technology (MIT).

unique/special asset they posses, foreign firms should also prefer direct investment to other alternative forms of acquiring foreign rent. These points implies that perfect competition assumed in neoclassical trade theories would not permit FDI, as it is not characterized by product differentiation.

Figure 4.1 Illustration of Hymer's Theory (1960)



Source: Author's schematization.

Figure 4.1 represents the fundamentals of Hymer's theory. The first box represents imperfect markets, which is a necessary condition direct investment. Imperfect markets are characterized by product differentiation and monopolistic advantages. These forces stimulate direct investment which involves capital movements. Thus a clear distinction between neoclassical theory and Hymer's theory is that the former asserts that capital movements result in direct investment while the later contends that the desire to invest as a result of imperfect markets leads to direct investment which involves capital movements.

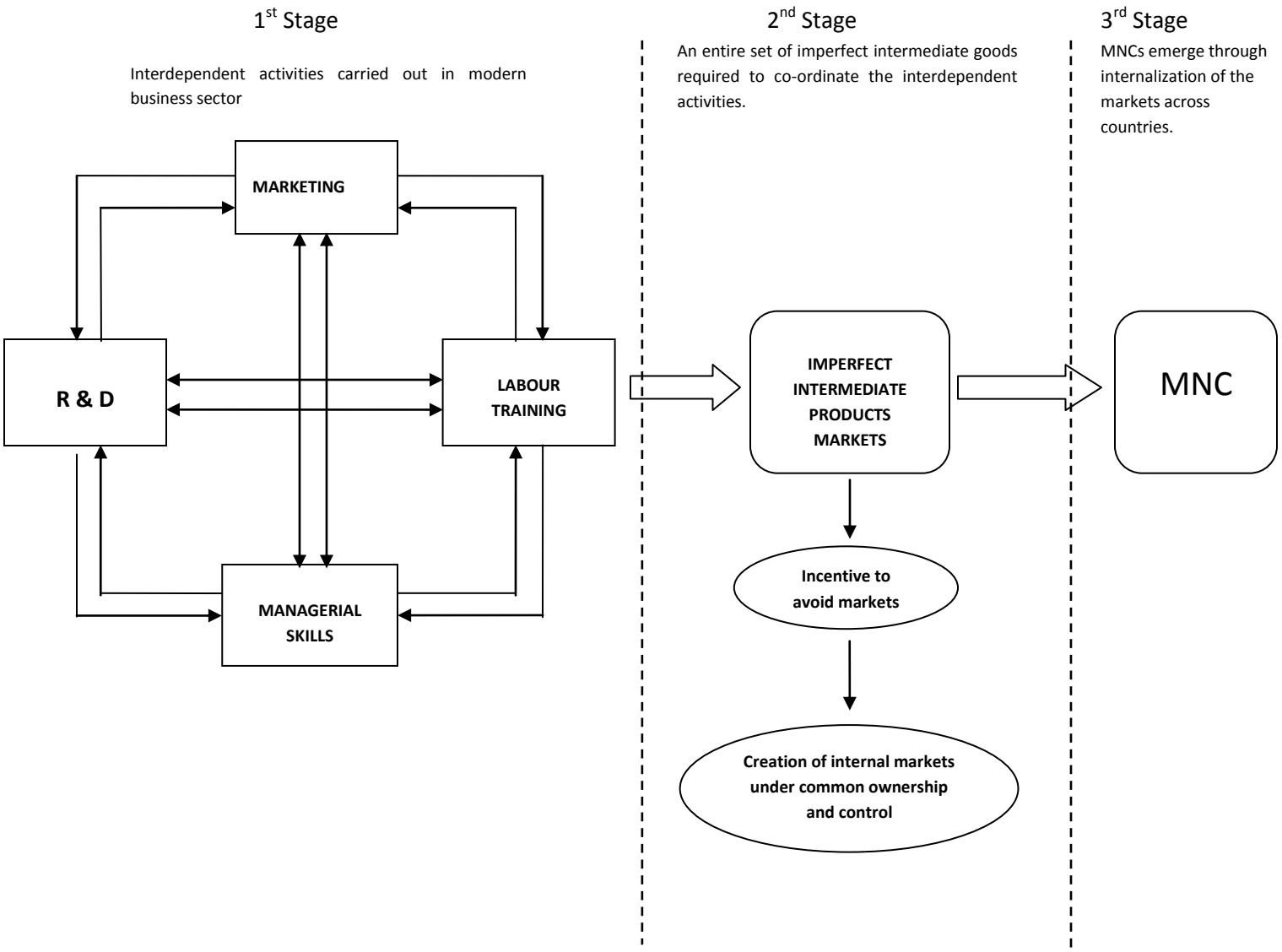
A different approach was taken by Vernon (1966) in the product life hypothesis. The main objection of this hypothesis to trade theories lies in its approach of de-emphasizing factor-proportion theory of

comparative advantage, and emphasizing on the timing of innovation, scale economies effects, and the role of uncertainty in trade patterns (Vernon, 1966). To explain the reason for FDI, Vernon asserts that at some stage after the introduction of a new product, the producers switch from exporting to foreign production. Thus after a new product emerges, it gradually transforms from a differentiated product to a standardized product. At the standardized or maturity stage, the product experiences a threat of competition from local products in the export target countries. According to Vernon, this threat is a significant motivation for shifting production abroad. In summary, Vennon' theory attempted to answer the question 'when' does foreign investment occur (Dunning, 1979).

4.2.2 Industrial organisation theory: Internalisation

Hymer's work marked a turnaround point from the neoclassical trade theory to the industrial organization theory (Dunning and Rugman, 1985). It changed the focus of multinational theory from the nation (macro) to the firm (micro) (Hennart, 2001). The questioned that remained unanswered at that point was: '*Why do firms, rather than markets internalize cross border transactions*?' (Dunning, 2001; pp.41).Buckley and Cason (1976) made the first comprehensive attempt to show how cross border transactions involving intermediate products were internalized within MNCs rather than within markets. The theory was based on Coarse (1937) market failure theories. Their basic assumption was that profit maximization occurs in the midst of imperfect markets. In their theory, they pointed out that modern businesses extend their activities to include interdependent activities such as marketing, research and development, training, and managerial skills. These activities are linked by flows of intermediate products which require a separate market. Buckley and Cason (1976) opine that due to the imperfect nature of these intermediate markets, internal markets emerge to avoid the demerits of imperfections in the external market. Thus the existence of imperfect markets creates the incentive for internalisation of the firm. Another theory of internalisation was developed by Hennart (1977) under the inspiration of McManus (1972). He asserted that the existence of imperfect competition generates transaction costs which can be eliminated by through internalisation.

Figure 4.2 Internalization process by Buckley and Casson (1976)



Source: Author's schematization

Figure 4.2 is a diagrammatic representation of Buckley and Casson (1976) internalization theory. It starts with the first stage in which modern firms carry out activities that are interwoven and linked by flows of intermediate products. The second stage involves the emergence of a market for intermediate products in order to harmonise these business activities. These intermediate markets are known to be imperfect, and therefore efficient organisation becomes a challenge. As a result of this imperfection, there is an incentive to avoid these markets. To avoid these markets, internal markets are formed across countries. Thus the third stage involves the emergence of MNCs through the internalization of the markets.

4.2.3 OLI framework by John Dunning

By the late seventies, there was a need to unify the theories of foreign direct investment, as previous theories focused on particular directions in their analysis. This was in order to consolidate the reasons why a firm will decide to engage in FDI. Thus in 1976, during a Noble symposium at Stockholm, John Dunning introduced a comprehensive blend of the trade theories with internalisation theory to develop the OLI eclectic theory of FDI. OLI stands for Ownership-Location- Internalisation advantages. According to Dunning a firm will engage in FDI if theses three conditions are satisfied (Dunning, 1979). At this juncture, we explain each of these conditions in turn.

Ownership (O) advantages

These are unique advantages a firm possesses relative to its competitors in the foreign market. In accordance with Dunning's theory, FDI would occur when the merits of implementing the advantages are higher than its opportunity costs. These "O" advantages could be in different forms (Dunning, 2000). It could be in the form of monopoly advantages possessed by firms as shown in Bain (1956) and Hymer (1960). The creation of barriers to entry could also depict ownership advantages as identified in Caves (1971, 1982) and Porter (1980, 1985). In the same vein, the ability of managers to detect and explore resources and potentials globally can be seen as "O" advantages.

In recent times, "O" advantages appear in the form of alliance capitalism, which involves synthesizing assets with comparative advantages of a firm and that of its competitors. Dunnig (2000) indicates that the following theories explain the "O" advantages: Product Cycle theory (Vernon, 1966), Industrial organization theories (Hymer, 1960; Caves, 1971, 1974; Dunning, 1958); Internalization theory (Buckley and Casson, 1976; Hennart, 1982).

Location (L) advantages

This explains the advantages that determine where FDI is situated. Particular countries possess advantages that enhance the ownership advantages. These "L" advantages could be in the form of complementary assets (Dunning, 2001).

Dunning (2000) pointed out that the idea of L advantages has different views according to disciplines. Economists have investigated the impact of exchange rates on the location of FDI (Cashman 1985; Froot and Stein, 1991; Rangan 1998). Business scholars assert that a competitive advantage involves the

optimal location of portfolio assets (Porter 1994, 1996; Enright 1991, 1998). In the nineties, economists and industrial geographers explored the clustering of economic activity in certain geographic regions (Audretsch 1998; Krugman 1991, 1999; Venebles 1998; Scott 1996; Stoper 1995; Stoper and Scott, 1995). According to Dunning (2000), theories that explain location advantages include Traditional Location theory (Hoover 1948; Hotelling 1929; Isard 1956); Internationalization related theories (Anderson and Gatignon, 1986; Cavusgil 1980; Daniels 1971); Agglomeration theories (Audretsch 1998; Enright 1991, 1999; Forsgren 1989) Spatial concentration related theories (Florida 1995; Scott 1996; Storper and Scott, 1995) Complementary assets related theories (Teece et al. 1997; Chen and Chen, 1998, 1999); Government induced incentives theories (Loree and Guisinger, 1995; UN 1996a); Exchange rate theories (Aliber 1971; Cushman 1985; Froot and Stein, 1991).

Internalization advantage

Following the acknowledgement of the fact that a firm with ownership advantages would decide to invest in a country with location advantage, an important question will be: Why would the firm choose to carry out the foreign investment by itself instead of engaging in other arrangements such as licensing or exportation. This answer to this question was given in the various forms of internalization theory- When transaction and organization costs of these other arrangements outweigh the costs of internalizing the market, the firm will choose to engage in FDI. These transaction costs are know to rise as imperfections in the market rises (Dunning, 2000). It should be noted at this juncture, that one of the distinctive features of I advantages is that it requires O and L advantages. Dunning (2000) outlines the following theories that explain internalization advantages: Orthodox internalization theory (Caves 1996; Buckley and Casson, 1976; Ghoshal et al. 1997); Efficiency related theories (Caves 1982; Teece 1981; Liu 1998).

It is important to note that the eclectic theory assumes that all the three advantages must be present before there will be foreign direct investment. In other words, all three advantages are necessary, but no one is sufficient (Sodersten and Reed, 1994).

4.2.4. Types of FDI

The OLI framework led to the classification of FDI into four different types, namely: natural resource seeking FDI, market seeking FDI, efficiency seeking FDI, and strategic asset seeking FDI (Dunning, 1998). Identification of these types of FDI underpins most empirical literature on the determinants of FDI. We now explain these types of FDI in turn.

The Natural Resource Seeking FDI

Some countries or regions are known to possess certain resources in abundance. Thus it is not surprising for MNCs which uses such resources to choose to locate subsidiaries in such locations. But what are these resources and what type of MNCs seek them? The answers to these questions lie in the further categorization of natural resource seekers. According to Dunning (2008), there are three groups of natural resource seekers.

The first group are the seekers of physical natural resource. This comprises mainly MNCs engaged in primary production and manufacturing, seeking for resources in mostly two broad categories: Fossil fuels lead by crude oil, coal, gas, metals, diamonds, etc. Agricultural products such as palm oil, cocoa, rubber, sugar, etc. Africa is known to be the hob of natural resources. This could explain the recent surge in FDI flows to Africa, particularly from China and India (UNCTAD, 2006), where the main attraction of MNCs to Africa is its abundance in natural resources. The second group are the seekers of cheap and efficient labour. Of recent, this motive for FDI is increasing due to the emergence of industrializing developing countries such as Mexico, Taiwan an Malaysia which seek cheap and resourceful labour in China, Morocco, Vietnam, and Turkey (Dunning, 2008). The manufacturing and services sector are the main undertakers of cheap labour seeking FDI. Due to the desirable impact on host nations' economy, especially on employment, host countries have implemented free trade and export processing zones (EPZs) in order to attract such FDI.

Third group are the seekers of technological know how, managerial and organisational skills. This motive usually leads to collaborative alliances between countries and regions.

Market seeking FDI

The motive for FDI could be to invest in a country due to the size/growth potential of its market, or the countries within the same region. This motive that entails seeking for market for goods and services is known as market seeking FDI. It has been noted that most MNCs that engage in this form of investment were previously exporters to the host country, who decided to carry out direct investment due to unfavourable tariffs and other barriers levied on their exports (Nicholas, 1986; Dunning, 2008). Thus host governments play an active role in encouraging this form of investment through imposing controls and barriers on imports. In addition to size of market, they are other reasons for market seeking FDI. These other reasons why firms may choose to carry out market-seeking FDI was outlined in Dunning (2008). The first reason is that some firms react to the decision to invest abroad by their suppliers and customers. Thus it becomes economically reasonable for them to follow them to invest overseas. Another reason for engaging in this type of investment arises due to the need for products to adapt to the culture and tastes of the host country. As a result firms decide to engage in direct investment in order to ensure that their products remain competitive in the midst of local products. The third reason is to reduce production and transportation cost by supplying in the market or in the regions around it. Lastly, a reason for market-seeking FDI may be to respond to competitors' investments in major markets across the globe. This situation is also known as the "follow your leader" or "bandwagon" strategy (Knickerbocker, 1973; Dunning, 2008).

Efficiency seeking FDI

The motive for FDI could be to reduce the cost of production or to achieve economies of scale. Due to structural differences among countries, firms are able to take advantage of the favourable factor costs and product prices in order to diversify risk. This type of FDI is known as efficiency seeking FDI, and it generally entails rationalization of the structure of international activities by firms in order to improve efficiency.

Strategic asset seeking FDI

In order to protect O advantages, firms may acquire or purchase the assets of existing firms. The aim is to strengthen their global competitiveness as part of their long term strategic objectives (Dunning, 2008). Thus strategic seeking FDI involves the pursuit of physical assets, R & D, market knowledge, human capital, etc, to enhance ownership advantages on one hand and subdue those of the competitors

(Dunning, 2008). The existence of strategic assets stem from the imperfections of the intermediate product market.

4.3. The theory of FDI spillovers in manufacturing firms

MNC activities have increased remarkably across the globe. Thus enquiry into their impact on host country has also increased in both political and economic spheres. In particular, the effects of MNCs on host country (domestic) firms have been a matter that has spurred some ingenuity in explaining its mechanisms. Different theories on the mechanism or the channel through which MNC generate spillovers on domestic firms exist in literature. These theories however do conflict on the direction of impact of each identified channel of spillovers. Theoretical literature has identified four channels of productivity spillovers on domestic firms. These are: Demonstration effect, Worker's turnover/mobility, competition, and linkages.

Critical to the study of FDI spillovers, is the role of technology transfer and technology diffusion in generating spillovers. Both technology transfer between MNCs and technology diffusion or transfer from MNC to domestic firms, involve costs (Wang and Blomstrom, 1998), but the costs are decreasing with the age of the technology transferred. Technology transfer occurs between the parent firm and the MNC subsidiary or affiliate in the host country. This transfer to subsidiaries is requires some amount of time, which is less than half of the time that would have been spent through licensing or joint ventures (Romeo, 1980). It is also deemed to bring newer technology to host country firms than through licensing (Mansfield and Romeo, 1980). In general, transfer of technology across borders is a major contributor of economic growth, especially in developing countries (Kuznets, 1966). However, the technology transferred to developed countries tends to be newer than that transferred to developing counties (Mansfield and Romeo, 1980).

Teece (1977) points out that the technological know-how possessed by MNC subsidiaries in host countries can diffuse to domestic firms with potential beneficial results. The key reason for technological diffusion is the existence of ownership advantages (Dunning, 1993), which can be in the form of intangible assets like technological ability, managerial, and marketing skills, are transferred in the form of knowledge capital (Markusen, 1995). In most cases (especially in developing countries) MNCs are assumed to be superior to domestic firms (Conyon et al. 2002). MNCs also invest more funds into human resource training and Research and Development (Edfelt, 1975; Goncalves, 1986). These

desirable skills or attributes of MNCs can "spill-over" to domestic firms causing increases in productivity. However, spillovers do not occur immediately MNCs commence operation in a host country, as some time is required for the intangible assets brought about through FDI becomes internalized in domestic firms (Globerman, 1979). The speed at which spillovers occur as well as the direction, are dependent on the channel at which it occurs

We therefore throw light into spillover mechanisms by explaining the four identified channels of productivity spillovers

Figure 4.3.The mechanism of FDI productivity spillovers

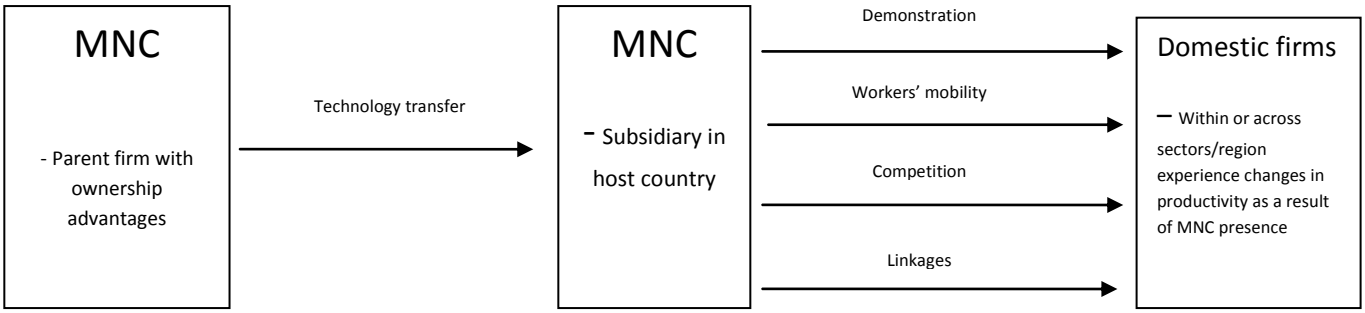


Figure 4.3 represents the mechanism of FDI productivity spillovers. It starts with the transfer of technology from the parent MNC to the subsidiary in the host country. This transfer is quite clear and does not involve much difficulty, despite the fact that it involves costs and it takes some time. The stage with more complexity is the spillover of technological know-how from subsidiaries to domestic firms through the four identified channels represented in arrows in Figure 4.3.

4.3.1. Demonstration channel

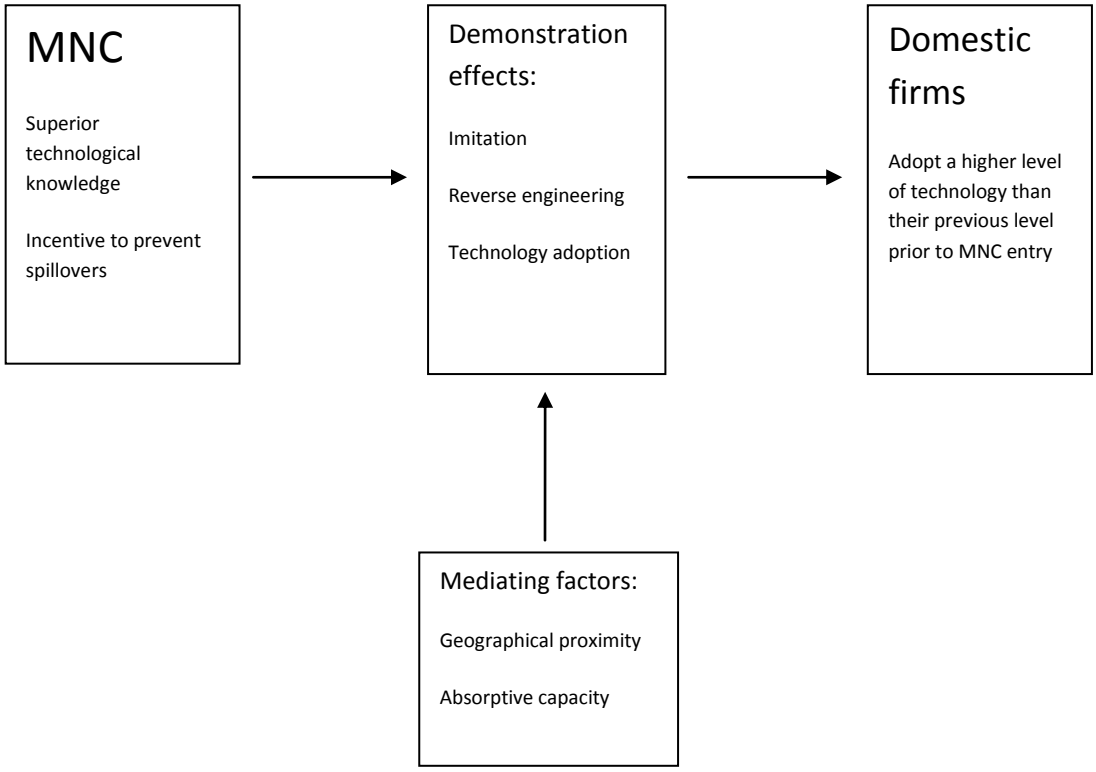
This occurs when domestic firms observe, imitate, and/or adopt the technological practices of MNCs. It is known as one of the strongest channels of productivity spillovers (Blomstrom, 1986). As earlier indicated, learning the technologies of MNCs by host country firms usually involve costs. The model developed by Wang and Blomstrom (1992) shows that the cost of imitating the technology of MNCs is inversely related to the rate of technology spillovers; while the investment in imitation is positively related. Glass and Saggie (1992) went further to demonstrate how the quality of technology transferred through imitation depends on the technology gap between MNCs and domestic firms. Their model shows that higher incentives to imitate or innovate in host countries increase the quality of technology

that home countries transfer to the host country. Their paper points out that a host country government can therefore attract state-of the art technology by encouraging investment on activities that promote imitation and innovation (such as R&D) through subsides, and discourage low quality technology usage through taxation.

Sawada (2010) extends the imitation models of Wang and Blomstrom (1992) and Glass and Saggie (1998) to include the notion that MNCs have an incentive to prevent spillovers while host country firms have an incentive to gain spillover in their model. The idea that MNCs possess means of avoiding technology leakage had been established in literature (Djankov and Hoekman, 1998). Javorcik (2004) points out that the means of avoiding leakages include intellectual property rights protection, trade secrecy, and strategically locating in countries with low absorptive capacities. Sawada (2010) follows this line of thought to define both expenditure on host country firms to gain technology spillovers and expenditure of MNCs to prevent spillovers as fixed costs which are strategic substitutes[11]. Their model point outs out that imitation undertaken by host country lowers marginal costs, which is an indication of the extent of technology spillovers. Thus comparing the marginal costs of production for MNCs and domestic firms indicates their respective levels of technology, and therefore the technology gaps. Spillover ratio is therefore defined as "the ratio of the reduction in the marginal cost of the home firm to the difference n the marginal costs of both firms without spillovers" (Sawada, 2010, pp. 4).

[11] Expenditures that are strategic substitutes imply that spending on one result in the reduction of the marginal profitability of the other.

Figure 4.4: Productivity/technological spillovers through demonstration channel



Author's schematization

Figure 4.4 represents the mechanism of demonstration effects. From left to right, the MNC subsidiary transfers technology to domestic firms through various degrees or combinations of imitation, reverse engineering, and technology adoption. Desirable host country characteristics such as geographical proximity and absorptive capacity are important mediating factors of demonstration effects channel of technology transfer.

4.3.2. Workers' mobility

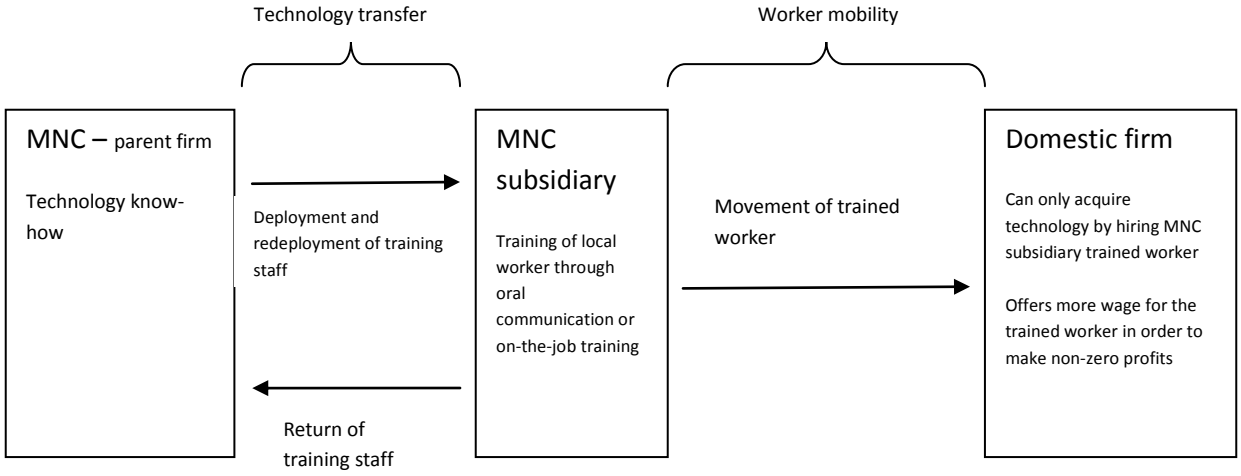
Worker's mobility is a channel of spillovers that occurs when workers from MNCs move to domestic firms or set up their own firms in the host country. An important question is: What brings about such movement of workers from MNCs to domestic firms? A starting point would be to look into the characteristics of MNCs, where the lobour movement emanate from. It has been established in literature that MNCs offer more training to workers than their domestic counterparts (ILO, 1981; Lindsey, 1986). Gershenberg (1987), Djankov and Hoekman (1999), and Sousa (2001) among other

studies show that MNCs provide more training than domestic firms in Kenya, Czech Republic, and UK respectively. Thus the knowledge exposed to MNC workers (especially indigenous staff) is a asset that domestic firms in the host country industry would wish to exploit. The movement of local workers from MNCs to local firms therefore offers opportunities for domestic firms to acquire and adopt the knowledge in their operation, thus productivity or efficiency increases are bound to be the case.

Mobility of local workers from MNCs to domestic firms is evident in some studies. Gerschenberg (1987), Pack (1993), and Glass and Saggie (2002) are among the studies that show evidence of labour movement from foreign to domestic firms. As in the case of demonstration channel, MNCs have an incentive to prevent labour movement from their firms, as movements will diffuse the technology, and consequently bring about competition for market share in the industry. The most plausible way MNCs attempt to prevent workers' mobility is to pay local workers relatively higher wages than domestic firms. Evidently, Gorg et al. (2002) found that workers in MNCs earn higher wages and experience higher wage growth than their domestic counterparts.

An explicit analysis of the conditions of workers' mobility was provided by Fosfuri et al. (2001), using game theoretical models. The starting point of the model is the decision of an MNC to engage in FDI rather than exporting or licensing, due to its profitability advantages. The model regards the superior technology of the MNC as exogenous, and transfers this technology by sending managerial staff to train local workers in the host country. The training of local staff involves a cost as well as fixed costs associated with operating in a different environment. But the MNC subsidiary enjoys monopoly of the industry due to absence of technological know-how of local firms at the stage. The MNC also has the incentive to pay relatively high wages to local workers in order to maintain its position as a monopoly of the technological know-how. Thus technology transfer to a local firm only occur when a worker in the MNC is offered and higher wage by a local firm, and she decides to move. If the MNC losses the trained worker, it re-deploys training staff to the subsidiary and the process starts again. The model however assumes that both MNC subsidiary and local firms have symmetric information about the value of the trained worker; local firms cannot hire workers from the MNC home country; technology transfer by imitation is ruled out; and zero profits will be made if trained worker is not hired. Figure 4.3 shows the diagrammatic representation of this process:

Figure 4.5: Productivity/technological spillovers through Workers' mobility



Author's schematization

Figure 4.5 shows the mechanism of workers' mobility of turnover. From left to right, the MNC parent firm transfers some training staff to the subsidiary as soon as operation commences, to train some subsidiary indigenous staff on ways of carrying out the company's operations. The training staff returns to the parent firm months after the training ends. This movement becomes a cycle when a considerable number of host country workers move to indigenous firms, or set up their own companies represented by the arrow pointing at the third box. This movement will require the redeployment of training staff to the host country, and this cycle continues as long as indigenous workers continue to move to other firms. In reality, the second stage movement of workers from subsidiaries to domestic firms can be prevented through high pay packages and contract agreements offered by MNCs.

4.3.3. Competition

This effect of competition in an industry as a result of MNC presence is widely acknowledged in literature (Kathuria, 2000). MNC entry can disrupt the pre-existing market equilibrium in a host country, making domestic firms to react towards protecting their market share and profits (Blomstrom and Sjoholm, 1997). A possible consequence of MNC entry is that domestic firms will be motivated to increase efficiency in use of resources in order to increase productivity (Barrell and Pain, 1997; Blomstrom and Kokko, 1999; Driffield, 2001; Bosco, 2001). Competition that results from MNC entry/presence is particularly important in countries where restrictions to imports exist, as it enhances technological diffusion to domestic firms that strive in the market (Haddad and Harrison, 1993). Also, competition can achieve positive spillovers to domestic firms when the MNC goods are close substitutes to domestic firm goods (Barrios and Strobl, 2002).

However, the competition brought about by MNC entry can adversely affect domestic firms. Aitken and Harrison (1999) was the first study to demonstrate the negative spillover effect of MNC presence through competition. They argue that in the short run, an imperfectly competitive market in a host county with fixed costs of production can experience a fall in demand for their products on the entry of a foreign firm with lower marginal costs (Aitken and Harrison, 1999). The fall in demand for products of domestic firms due to foreign entry will result in higher unit cost of production as fixed costs would be borne by a shrinking market. MNCs however are in advantage position, as they are already established with higher capacity to bear the fixed costs than domestic firms (Sembenelli and Siotis, 2002). The resulting effect in such cases would be a fall in productivity of domestic firms and thus negative spillovers from FDI. Aitken and Harrison (1999) refer to this impact of MNC as the "market-stealing effect" of foreign firm entry. Buffie (1993) had earlier indicated that FDI could crowd out domestic firms, resulting in decline in aggregate capital stock of the industry, and as a consequence, a fall in employment of the industry. Makusen and Venables (1999) also acknowledge that foreign firm entry could capture the share of market previously owned by domestic firms.

The negative effects of MNC entry in the short-run could be offset in the long-run when domestic firms invest in new technology in order to maintain market shares (Blomstrom and Kokko, 1996). In some extreme cases, MNC entry could lead to exit of domestic firms that can not bear the burden of a rise in their unit cost of production. However, the firms that exit the industry in these cases are mostly the inefficient firms, thus the exit of some domestic firms increases the efficiency level of the industry (Blomstrom, 1986).

In general, the effects of competition are dependent on characteristics of both MNC and domestic firms. Host countries with adequate absorptive capacities and technological know-how are likely to reap the positive benefits of competition. The opposite is the case for domestic firms with low absorptive capacities and limited technology.

4.3.4. Linkages (Vertical spillovers)

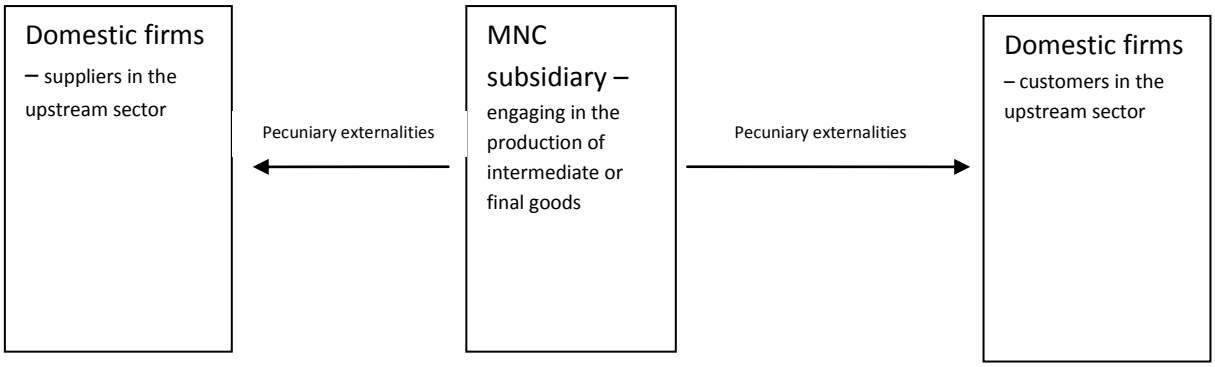
Unlike the other channels of spillovers, linkages are pecuniary externalities that affect domestic firms. Linkages involve market transactions (Alfaro and Rodriguez-Clare, 2003). They typically result from the purchase of goods from suppliers or customers. Two types of linkages exist in literature: Backward linkages, which occur when MNCs generate spillovers which benefit domestic suppliers in the upstream sector; and forward linkages, which occur when MNCs generate spillovers to domestic customers in the downstream sector. Linkages can also be broadly defined to include cases where the effect could be negative. Thus there can be negative backward or forward linkages.

Backward linkages are more likely as MNCs tend to be mostly engaged in the production of final consumer goods, using intermediate goods produced by domestic firms as inputs. Rodriguez-Clare (1996) model shows that the necessary conditions for backward linkages include the high costs of communication between parent firm and subsidiary, and availability of large variety of intermediate goods in both home and host countries. Thus the complex nature of the final goods produced by MNCs will lead domestic suppliers of intermediate goods to increase production and variety of these goods. The increase in the variety of goods can raise the general productivity of industries in a particular host country. The driving force of backward linkages is the abilities or capabilities of domestic suppliers, which motivate MNCs to interact with them (Dunning, 1958; Cantwell, 1989).

In many cases, the backward linkages exist due to intentional assistance of domestic suppliers through the provision of technology by MNC producers. This is because unlike the case of horizontal spillovers, MNCs do not have the incentive to prevent backward linkages, as it positively affects their own productivity. Thus spillovers through this channel frequently occur (Javorcik, 2004). However, there are cases where MNC entry has no effect on domestic suppliers in the upstream sectors. This may be due to the fact that all inputs are imported by the MNC.

The present study however limits investigation of productivity spillovers to horizontal spillovers. The exclusion of vertical spillovers or linkages is mainly due to data unavailability, as empirical investigation of linkages are data demanding.

Figure 4.6 Backward and Forward linkages



Author's schematization

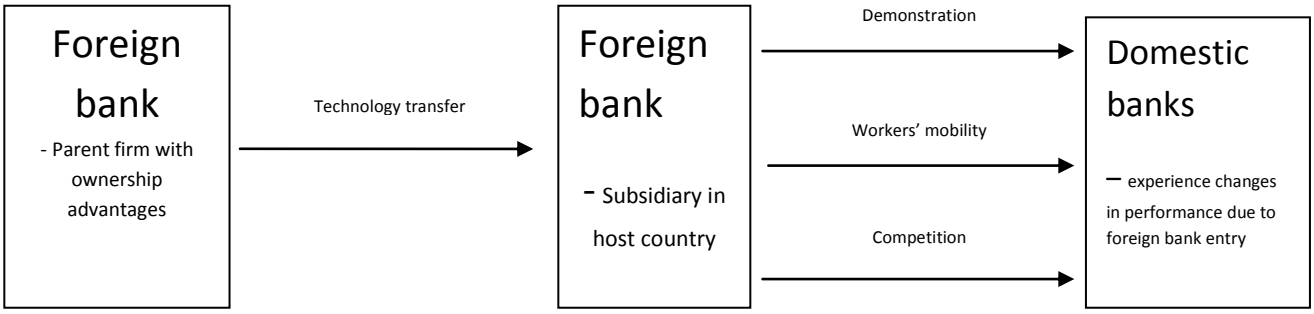
Figure 4.6 shows a simple illustration of the mechanism of FDI linkages. The MNC subsidiary as a final good producer can cause pecuniary externalities on domestic suppliers in the upstream sector as demand for their intermediate goods produced increases, leading to an expansion of output. This expansion of output generates efficiency, as average costs fall due to economies of scale. The mechanism is similar when the MNC is the intermediate supplier. Superior intermediate goods distributed effectively will increase the efficiency of upstream customers in the host country.

4.4 The theoretical background of foreign bank entry effects on bank performance

The theory of foreign bank effects follows the FDI theory highlighted in 4.1. As in the case of MNCs in the manufacturing sector, banks decide to invest abroad due to specific/ownership advantages they wish to utilize in foreign financial markets (Hymer, 1960; Dunning, 1980). According to Dunning (1989), similar to the manufacturing sector, the ownership advantages of MNCs in the service sectors such as banks are in the form of product differentiation, economies of scale and scope, and superior access to inputs. In terms of product differentiation, Dunning (1989) noted that the creation and sustainability of brand image and goodwill relative to competitors is a common attribute of MNCs, which they exploit in foreign countries. In banks, product differentiation would be in the form of advantages or superiority in the capacity to deliver services and produce modern financial products at lower costs than competing banks. Economies of scope in the variety of services of highly capitalized banks, and the economies of scale in lowering costs of operation due to their size, gives foreign banks huge advantages in the host economy. The capacity of foreign banks also gives them advantages in sourcing for inputs at lower costs, making them relatively efficient in the industry.

With ownership advantages, banks can engage in international delivery of their services for reasons such as to follow their customers, which are in most cases, multinationals (Clarke, et al., 2003; Naaborg, 2007); or to explore the host country market. A key driver of foreign banks entry is liberalization and deregulation of host country sectors, which include banking (Dunning, 1989). The economic and financial liberalization wave experienced in the 1980s, many countries “opened up” to foreign investment in the banking sector. But how does the operation of foreign banks affect domestic banks in host countries? MNC theories by Dunning (1989) and Levine (1996) shows that the channels of FDI productivity spillover in the manufacturing sectors are also true in service sectors such as banks. Foreign banks, having superior intangible assets such as managerial skills and effective service delivery can transfer technology or know-how to domestic banks through similar channels to the manufacturing firms such as demonstration, workers’ mobility, and competition (Wu, 2011).

Figure 4.7 Foreign bank entry effect mechanism



Author's schematization

Figure 4.8 shows the mechanism of foreign bank entry effect. From left to right, the foreign bank decides to invest in a foreign country, and transfers its technology to the subsidiary bank in the host country. The operation of the subsidiary leads to changes in domestic bank performance through channels such as demonstration, workers' mobility and competition. The key channel of productivity externalities on domestic firms is competition. A consensus view on the effect of foreign presence in host countries is that their operations will increase competition, and therefore spur domestic banks to improve performance in order to remain in the industry or to maintain its relevance (Bhattacharaya, 1993; Clarke, et al., 2003; Unite and Sullivan, 2003; Naaborg, 2007).

4.5 Harmonizing FDI spillover and foreign bank effect models

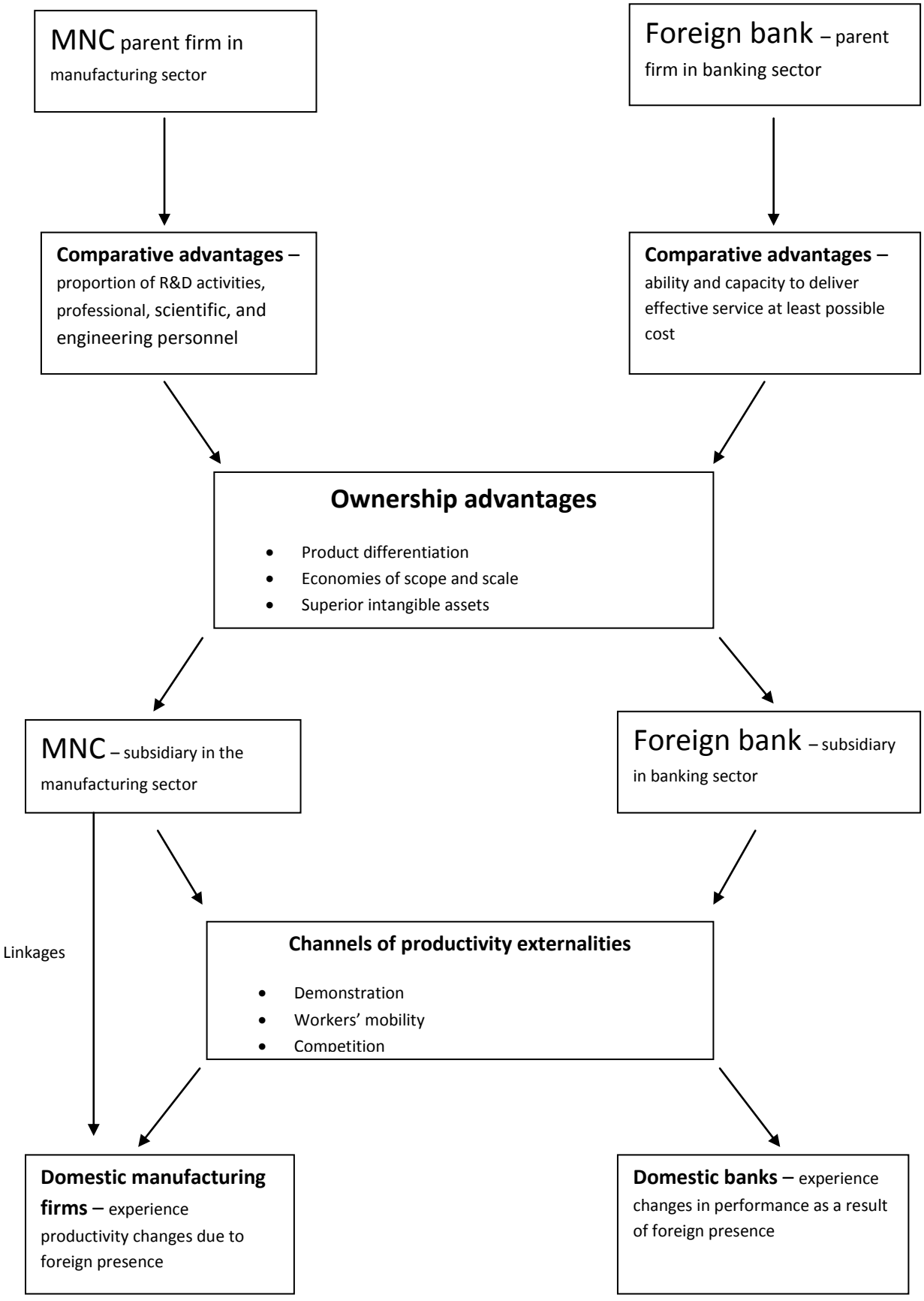
The mechanism of FDI spillovers on domestic firms can be applied to the banking industry to a considerable extent (Levine, 1996; Xu, 2011). Starting from the reasons for the decision to invest in a foreign country, the presence of ownership advantages which motivates internationalization of operations is true for both manufacturing firms and banks. However, the form of ownership advantages is fairly different in the two sectors. While MNCs in manufacturing sectors rely on the proportion of R&D activities, professional, scientific, and engineering workers in the entire labour force of the company as a competitive edge; banks rely on their ability and capacity to coordinate information necessary for the delivery of superior services at the lowest possible cost (Dunning, 1989). But the underpinnings of ownership advantages which consists of various degrees of the combination of product differentiation, economies of scale and scope, and superior intangible assets is applicable in both manufacturing and banking sectors.

There are also some differences in the pull factors of MNCs and foreign banks. MNCs engaged in manufacturing typically expand operations abroad to serve a different market, to exploit abundant natural resources in host country, or to increase efficiency in production due to reduced labour costs in the host county. These locational advantages are the major reasons manufacturing firms across the world flock to locations such as China and India. In the case of banks, despite the fact that these motives for FDI converge, some are specific to the banking sector or the services sector in general. Of particular prominence is the evidence that banks follow their customers such as multinationals to foreign locations (Clarke, et al., 2003; Naaborg, 2007). In the case on market-seeking FDI, while MNCs manufacturing are commonly incentivized to invest in foreign countries by host governments; foreign banks often face the obstacle of bank regulation and legislation which is rather more dynamic in the sector. Banks are highly regulated institutions, and thus cases of deregulation and liberalization motivate foreign banks to set up subsidiaries in such industries.

The consequences of the operations of foreign bank subsidiaries are quite similar to that of MNCs in the manufacturing sector. Productivity or performance changes on both types of firms arise through channels such as demonstration, workers' mobility, and competition highlighted in section 4.2.However, Linkages as a means of FDI productivity spillovers, seems to be restricted to manufacturing firms, as it involves suppliers or consumers of intermediate physical goods, which is not the case in banking sectors. The most prominent channel through which foreign subsidiaries affect domestic banks is competition. This motivates domestic banks to upgrade services in other to keep its customers, and thereby maintain relevance in the industry.

Figure 4.7 shows the relationship between the two theories. It shows that there are some common grounds in phenomenon of ownership advantages and the channels of productivity externalities in both MNCs in manufacturing and foreign banks. Differences however exist in the forms of ownership or competitive advantages and the fact that linkages as channel of FDI spillovers, seems to be peculiar to the manufacturing sector.

Figure 4.7.The mechanism FDI spillovers in manufacturing and foreign bank effects



In conclusion, this chapter had provided a theoretical background to the empirical investigation of spillovers and foreign bank effects by highlighting the underpinnings of FDI theory and its ability to explain the existence of spillovers on domestic firms. We also pointed out that the theories that explain the FDI spillovers in the manufacturing industry are applicable to the banking industry. Chapter 6 and 7 will however show that despite the similarities in the mechanism of FDI impact on both industries; their empirical investigations involve the use of quite different models.

Chapter 5: Review of empirical literature

5.1 Introduction

A crucial contribution of this thesis is the identification of aspects of FDI spillover literature that has been rather neglected. In particular we extensively review literature on FDI spillovers in manufacturing in order to point an aspect that has not been given appropriate attention. We pinpoint in this chapter that there are potential problems with previous empirical investigations of spillovers in terms of lack of attention paid to the data from which the measure of foreign presence is computed, especially in relation to number of firms in each region or sector and the sampling methodology implemented.

Thus in order provide a critique of previous literature, a starting point would be to provide an overview of the directions of research on FDI spillover literature. This chapter therefore provides a comprehensive review of literature on FDI spillovers in manufacturing firms and foreign bank presence effects on domestic banks. Literature on the former is enormous while that of the latter is relatively new and limited. Thus our critic of literature presented in section 5.5 will focus on manufacturing firms. However, the problems pointed out using literature on FDI spillovers in manufacturing firms also apply to that of banking industry.

5.2 Review of empirical literature on FDI spillovers in the manufacturing Industry

There is an enormous amount of empirical literature on the investigation of productivity spillovers from FDI in the manufacturing sector. The approach towards the investigation is dependent on how productivity is defined. In literature, the most common measures of productivity are Value of output, Value added in production, labour productivity, total factor productivity (TFP), and differences in production functions (Lipsey and Sjoholm 2005). A dominant approach in literature which we follow in this study is the measure productivity based on differences in production functions, using value of output and value added in production as dependent variables. Relating the model to the effects of FDI involves the augmentation of the model to include measures of foreign presence. In the case of FDI spillovers on domestic firms, the coefficient of the foreign presence measure in a productivity model run on domestic firms is considered as the extent and direction of productivity spillovers.

Thus the typical methodology is the specification of variants of a Cobb-Douglas production function, which relates a measure of output (Aitken and Harrison, 1999), value added (Konishita, 2000) or total factor productivity (Barrios and Stobl, 2002) with explanatory variables that are deemed to affect productivity. Thus the typical empirical specification of spillovers can be represented as follows:

$$Y_{ij} = c + \beta_1 K_{ij} + \beta_2 L_{ij} + \beta_3 X' + \beta_4 FE_{ij} + \beta_5 FP_j + \varepsilon_{ij} \quad (1)$$

Where K and L represent capital and labour respectively. *FE* is the percentage of equity owned by foreigners, *FP* is the constructed variable that measures spillovers, and ε is the error term. Subscripts *i* and *j* represent firm and sector respectively. FDI spillovers are measured by the coefficient and significance of β_5 in a regression. Thus while β_4 determines whether foreign firms are more productive than domestic firms; β_5 determines whether foreign presence affects the productivity of all firms or domestic firms in the sector.

However, measuring productivity by comparison production functions involves rather strong assumptions. These include the assumption that there are no differences in technological knowledge involved in determining the factor combinations or plant size (Lipsey and Sjoholm 2005). Thus the technological knowledge involved in running a large plant is identical to that of a small plant. This assumption also holds while comparing capital intensive plants and labour intensive plants. However,

this assumption seems to be unrealistic especially in the case of productivity spillovers from FDI as foreign firms are bound to possess technological knowledge entirely different from that of domestic firms. Thus these technological differences could be wrongly captured as differences in production scale or factor choices (Lipsey and Sjoholm 2005). However panel techniques applied in this study are capable of controlling for firm-specific heterogeneity which may bias estimates.

Another approach towards modeling FDI spillovers present in literature, are methods that control for potential endogeneity in the model. The endogeneity issues in estimating production functions undermined the empirical estimation of productivity for a long time. Griliches and Mairesse (1995) explicitly show the shortcomings of estimations that treat production inputs as exogenous. Their work also assessed different approaches towards solving this problem in literature. Of particular note is the Olley and Pakes semi-parametric estimation procedure which has been commended by productivity scholars (Griliches and Mairesse 1995; Van Biesebroeck 2004). Thus in the case of productivity spillovers from FDI investigation, estimation of TFP by the Olley and Pakes method abound in literature (Javorcik 2004; Keller and Yeaple 2004, Todo and Miyamoto 2006; Koestas 2008).

The estimation procedure proposed by Olley and Pakes (1996) essentially performs two crucial tasks in the estimation of TFP. The first is that it accounts for firm specific productivity differences which reveal unique changes over time. Secondly, it controls for the entry and exit of firms. Levinsohn and Petrin (2003) method also follows a similar approach to that of Olley and Pakes (1996). The major distinction beign that Olley and Pakes assumes that investment is an increasing function of productivity and capital, while Levinsohn and Petrin modelled material inputs as a monotonic function of the same.

However, despite the availability of the choice of approach is dependent on data availability and characteristics of the firms examined. Our approach in this study however is to review empirical literature on FDI spillovers according to the nature of the investigation employed in the studies. Thus we identify two broad categories of spillover investigation: Studies on spillover occurrence and Studies on determinants of spillovers. The latter category is further divided into Studies on the effect of MNC characteristics on spillovers, Studies on the effect of domestic firm characteristics on spillovers, Studies on the effect of host country characteristics on spillovers.

5.2.1 Empirical studies on Spillover occurrence

Empirical literature has often focused solely on the search for the existence of spillovers, without explicitly associating any determinant to its occurrence. Thus this section deals with studies that attempt to ascertain whether spillovers occur irrespective of the any particular characteristic of the MNCs, domestic firms or the context of the investigation. This sub-section focuses on studies that search for either intra-industry (horizontal) spillovers, inter-industry (vertical spillovers), or regional spillovers. Studies on vertical spillovers are further disentangled into backward spillovers (backward linkages) and forward spillovers (forward linkages).

Early studies on spillovers were based on developed countries using industry level data. Caves (1974) investigated the presence of spillovers in Australia and Canada. Using both labor productivity and profit models, the study found positive intra-industry spillovers in Australia, but weakly negative spillovers in Canada. Similarly, Globerman (1979) found a positive relationship between foreign presence and labor productivity among Canadian industries. At this stage, FDI spillover investigation was mainly carried out on the industry level, without controlling for firm heterogeneity in their respective models. This was partly as a result of unavailability of disaggregated firm level data for such analysis. Thus results based on industry data during this period might be misleading as the industrial classification in the seventies implies that the number of observations might be limited[12] (Caves 1974 was based on 110 industries), and therefore might not permit rigorous econometric analysis required for appropriate estimation of spillovers.

Haddad and Harrison (1993) was the first study to employ firm level panel data for the investigation of FDI spillovers. Their analysis found no evidence of spillovers amongst 4,236 Moroccan firms over the period 1985 to 1989, using augmented production function estimations. Chuang and Lin (1999) used a different approach by using both probit and OLS model to investigate FDI spillovers in 8,846 Taiwanese establishments. Their work found positive productivity and R&D spillovers. It is important to note that these studies were based on the assumption that spillovers are bound to be positive if they exist. Therefore the term 'spillovers' was defined as an externality, implying that the spillovers were bound to be positive. But this notion was contested in Aitken and Harrison (1999), where robust inter-industry negative spillovers spillovers were found on Venezuelan firms between 1976-1989 using panel data

[12] Industrial classification of manufacturing industries in the seventies is broader than their current classification, implying that the observations of empirical work in seventies literature are likely to be limited.

techniques (fixed effects). This negative spillovers were attributed to the existence of "market stealing effect" of the presence of MNCs (Aitken and Harrison, 1999).Thus their study threw light into the fact spillovers can actually be negative.

Despite the availability of firm level panel data, some studies found no evidence of productivity spillovers. Khawar (2003) found no evidence of intra-industry spillovers amongst 2,362 firms in Mexico. Similarly, Ruane and Ugar (2004) using Fixed/Random effects, found no relationship between foreign presence and labour productivity in 4,600 firms in Ireland, over the period 1991 to 1998. Different results were found in a study of agro/agro-allied companies in Nigeria by Ayanwale and Bamire (2004). The study found positive and significant intra-industry spillovers using fixed effects estimations. In a similar vein, Yasar and Paul (2007) examined the existence of intra-industry spillovers in 437 firms across five countries: Poland, Moldova, Tajikistan, Uzbekistan, and Kyrgyz Republic. Their analysis found foreign presence in an industry results in an increase in labour productivity of domestic firms. In direct contrast, Waldkirch and Ofusu (2010) found significant negative relationship between foreign presence and the level of value added per employee in their study on 200 firms in Ghana, using Generalised Method of Moments (GMM) technique of estimation. However, the results using the growth rate of the model yielded positive spillovers.

These contradicting results in earlier studies spurred recent studies to take different methodological approaches towards the investigation of intra-industry spillovers. One of such approaches is the use of instrumental variable (IV) technique. Jordan (2010) argued that foreign presence measure typically employed in literature (share of foreign employment in industry) is likely to be plagued by endogeneity. Thus the study employed the overall FDI in manufacturing industries in Mexico as an instrument for foreign presence variable. This resulted in positive intra-industry spillovers. Another approach was the use of spatial dynamic model in modeling spillovers in 29 provinces in China by Hun and Sun (2010). This involves the assumption that the 29 provinces are spatially arranged, and thus would require estimation techniques that control for spatial interdependence. Using GMM estimations, their study found positive spillovers from FDI in China.

In the quest to explain spillover occurrence, different studies attempted to uncover other forms of spillovers aside intra-industry spillovers. One of such forms is Intra-regional spillovers, which is simply the observed impact of the presence of MNCs on domestic firms in the same region. There are two forms of inter-regional spillovers: spillovers that occur amongst firms in the same industry and region; and spillovers amongst firms in the same region but not in the same industry. Haskel (2007) and Mullen

and Williams (2007) examined the presence of intra-regional spillovers in the U.K. and U.S. respectively, both using the regional share of employment by foreign firms. The two studies found no evidence of spillovers.

As the question of whether FDI spillovers exist became a global issue and as data for its investigation became more disaggregated, different studies searched for spillover occurrence in all possible existing forms. Of particular importance is the inclusion of inter-industry/regional analysis in spillover investigation. Thus the occurrence of spillovers was sought among suppliers of intermediate goods (backward spillovers), buyers of intermediate goods (forward spillovers). Different articles therefore combined different forms of spillovers in their model(s).Lopez-Cardova (2002) in addition to examining intra-industry spillovers, examined the presence of inter-industry spillovers (backward spillovers and forward spillovers). As in most cases, the study relied on input-output tables of Mexico to compute measures of vertical spillovers. Using data of 5,700 plants, Lopex-Cardova (2002) found contrasting results between intra-industry and inter-industry spillovers: Negative intra-industry spillovers, and positive forward and backward spillovers. More robust results for backward spillovers were found in Alfaro and Rodriguez-Clare (2003). Using a large dataset of 38,926 firms in Chile, Mexico, Venezuela, and Brazil; their analysis found strong support for the existence of backward linkages.

Harris and Robinson (2004) provided a comprehensive investigation of FDI spillovers, by examining intra-industry, backward, forward, and regional spillovers in UK firms over the period 1974 to 1995. Using GMM estimation technique, their study found no evidence of spillovers in ether forms of spillovers. A similar study by Driffield et al. (2004) also explored the presence of spillovers within/across industries and regions in the UK, over the period 1984 to 1992. The major difference between Harris and Robinson (2004) and Driffield et al. (2004) is that while former was base on firm level data, the latter was based on industry-level data. Another difference is that the number of year observations in Harrison and Robinson (2004) more than double that of Driffield et al. (2004). However, the two studies are similar due to the fact that they both used the Office of National Statistics (ONS) as data source, and GMM technique of estimation. Despite these similarities, results of Driffield et al. (2004) largely differ from those of Harris and Robinson (2004), as the former reported no intra-industry spillovers, positive forward spillovers, and negative backward spillovers.

Comprehensive investigations of spillover occurrence in African countries also exist in literature. Bwalya (2006) examined whether intra-industry or inter-industry spillovers occur in 145 firms in Zambia. The results of the analysis show evidence of both positive intra-industry and inter-industry spillovers, using

both fixed/random effects and GMM techniques. Similar positive results were obtained in Managi and Bwalya (2010), which involved the extension of the dataset, included manufacturing firms in Kenya and Tazania.

Table 5.1 Studies on Spillover occurrence

Author	Data	Country	Aggregate	Dependent variable	Estimation Technique	Results
Caves (1974)	87 manufacturing industries in Canada 23 manufacturing industries in Australia	Canada and Australia	Industry	Profit; Value added per employee	OLS	Positive intra-industry spillovers in Australia Weak negative intra-industry spillovers in Canada
Globerman (1979)	Data sourced from the annual Census of Manufactures - sample of 4-digit Canadian manufacturing indistries	Canada	Industry	Value added per employee	OLS	Positive intra-industry spillovers
Haddad and Harrison (1993)	data on manufacturing firms, over the period 1985-1989	Morocco	firm level	value added	OLS	No intra-industry spillovers
Chuang and Lin (1999)	8,846 establishments for 1991	Taiwan	firm-level	TFP model	-1st stage probit equation 2nd stage OLS regression	Positive intra-industry spillovers Positive R&D spillovers
Aitken and Harrison (1999)	3,955-6,044 firms btw 1976-1989	Venezuela	firm-level	Output	OLS WLS within estimates - fixed effects	Negative intra-industry spillovers
Lopez-Cordova (2002)	5,7000 plants, over 1993-1999 in Mexico manufacturing	Mexico	plant level	Output	Olley and Pakes (1996) semi parametric estimation	Negative intra-industry spillovers Positive backward spillovers Positive forward spillovers

Alfaro and Rodriguez-Clare (2003)	Unbalanced panel of 38,926 observations, 1997 - 2000	Chile, Mexico, Venezuela and Brazil	firm-level	Output	OLS	Positive backward spillovers
Khawar (2003)	2,362 firms in 20 industries	Mexico	firm-level -	Labour productivity	OLS	No spillovers
Harris and Robinson (2004)	Information on 14-19,000 establishments in 20 industries over the period 1974-1995	UK	plant level	Output	GMM	No spillovers
Ruane and Ugur (2004)	4,600 companies (all companies), btw 1991-1998 unbalanced panel	Ireland	plant level	Labour productivity - output/emp	Fixed /Random	No spillovers
Ayanwale and Bamire (2004)	Data on agro/agro-allied companies listed in the first tier market of the Nigerian Stock Exchange Commission and the CBN, 1987-1996, panel data	Nigeria	firm level	Output/wage	OLS Fixed Effects	Positive intra-industry spillovers
Driffield et al. (2004)	Industry and regional level data on 20 manufacturing sectors in the UK, covering 1984-1997	UK	Industry	Output	GMM estimator	No intra-industry spillovers Positive forward spillovers Negative backward spillovers
Bwalya (2006)	145 firms for the period 1993-1995	Zambia	firm level	Output	OLS Fixed/Random Effects GMM	No intra-industry spillovers Positive backward spillovers Positive regional spillovers
Haskel et al. (2007)	Unbalanced panel data of 13,000-23,000 plants per year over the period 1973-1992	UK	firm level	Output	OLS IV	Positive intra-industry spillovers No regional spillovers

Fan and Hu (2007)	998 Chinese firms from 1998 to 2000, in 14 economic sectors	China	firm level	Logistic value of R&D efforts;TFP model; Labour productivity model	OLS Fixed Effects	Positive R&D spillovers
Mullen and Williams (2007)	312 observations for 1997	U.S.	firm level	Value added/emp	OLS	No spillovers
Yasar and Paul (2007)	437 firms in Poland, Moldova, Tajikistan, Uzbekistan, and Kyrgyz Republic	Poland, Moldova, Tajikistan, Uzbekistan, and Kyrgyz Republic	firm level	TFP ; Labour productivty	OLS	Positive intra-industry spillovers
Bitzer and Kerekes (2008)	10 manufacturing sectors in 17 OECD countries btw 1973-2000	OECD	Industry	Gross output	FGLS; fixed effects and a set of time dummies	
Managi and Bwalya (2010)	727 manufacturing firms in Kenya, Tanzania and Zimbabwe, over the period 1993-1995	Kenya, Tanzania and Zimbabwe	firm level	Output	GMM	Positive intra-industry spillovers Positive backward spillovers
Jordaan (2010)	unpublished data fro the 1994 Mexican manufacturing census - entire population	Mexico	industry level	Labour productivity - output/emp	OLS IV	Positive intra-industry spillovers
Sun (2010)	144 sectors in Chinese manufacturing in 2004 Source: China Economic Census Yearbook	China	industry level	Output/TFP model	OLS	No spillovers
Lileeva (2010)	Balanced panel of 8,088 Canadian-controlled plants, over the period 1981-1997	Canada	plant level	Labour productivity	Fixed effects	Negative intra-industry spillovers No backward spillovers Positive forward spillovers

Waldkirch and Ofosu (2010)	Comprehensive panel dataset of 200 firms , over the period 1992-1996	Ghana	firm level	Value added; TFP; Labour priductivity - value added per worker	OLS Levinsohn and Petrin (2003) System GMM	Negative intra-industry spillovers (level effect) Positive intra-industry spillovers (growth effect)
Xu and Sheng (2011)	unbalanced dataset of 134,130-169,810 firms, over the period 2000-2003	China	firm level	Output model	Levinsohn and Petrin (2003); GMM	Negative intra-industry spillovers Positive forward spillovers Negative backward spillovers

5.2.2 Studies on determinants of Spillovers

Spillovers and domestic firm characteristics

Absorptive capacity

The lack of consensus in empirical literature on spillovers has spurred the investigation of whether specific characteristics of domestic firms are necessary for spillovers to occur. One of such qualities is the absorptive capacity of domestic firms in particular industry or region. The most dominant proxy for absorptive capacity in literature is the expenditure/investment in R&D. Other measures include level of education of employees, the value of intangible assets in a firm etc.

Kathuria (2000) and Kinoshita (2000) are amongst the early studies that found that investment in R&D by domestic firms was a necessary condition for spillovers to occur in their OLS estimations on India and Czech Republic respectively. Similar results of on complementarity of spillovers and R&D were obtained by Barrios and Strobl (2002) using fixed effects estimation on panel data of 2,100 firms in Spanish manufacturing firms. Sembenelli and Siotis (2008) also show that profitability of domestic firms is positively related to the intensity of R&D in the industry which enhances spillovers. Schoors and van der Tol (2002) showed that effect of absorptive capacity of domestic firms is directly related to the openness of the sector, using cross sections of Hungarian manufacturing firms in 1997 and 1998. Keller and Yeaple (2004), show that high-tech industries in the United States exclusively possess the capabilities to absorb spillovers from MNCs, while the opposite is the case for low-tech industries, thus a nonlinear relationship existed across industries. Identical results were found among high-tech industries in the UK using 7,516 firms between 1989 and 1999 in Girma (2005). Girma and Wakelin (2007) also show that the effect of absorptive capacity of UK domestic firms has a regional dimension. Similarly, Qi et al. (2009) found that variations in absorptive capacities of domestic firms across provinces in China can explain the regional differences in FDI spillovers.

Further evidence of the positive impact of absorptive capacity on spillovers abounds in literature. Todo (2006), found that the size of R&D of domestic firms is directly associated with the extent of spillovers in Japanese manufacturing firms over the period 1995-2002. Bransletter (2006) also found that knowledge spillovers to and fro domestic firms in Japan are more robust through R&D facilities. Studies based on Chinese manufacturing all show evidence that absorptive capacity enhances spillovers. Blake et al. (2009) show that the R&D expenditure per capita in local Chinese firms boosts spillovers. Chen et al.

(2010) also show that strong absorptive capacity is required to benefit from FDI spillovers using industry level data on 195 industries in China, while Zhao and Zhang (2010) used level of human capital as a measure of absorptive capacity and showed its complementarity with positive spillovers, using firm level data on China.

However, Castellani and Zanefi (2003) findings suggest that absorptive capacity of domestic firms do not affect spillovers, using a panel data set of 3,932 firms in France, Italy and Spain.

Table 5.2 Effect of absorptive capacity on spillovers

Author	Effect of absorptive capacity
Kathuria (2000)	Positive spillovers among Scientific subgroup that invest in R&D
Kinoshita (2000)	Positive spillovers only when domestic firms invest in R&D
Barrios and Strobl (2002)	Positive spillover only on forms with appropriate absorptive capacity
Schoors and van der Tol (2002)	Positive effect of absorptive capacity on spillovers in open sectors
Castellani and Zanfei (2003)	No effect of absorptive capacity on spillovers
Keller and Yeaple (2004)	Positive spillovers only in high-tech firms with appropriate absorptive capacity
Girma (2005)	Positive spillovers only in high-tech firms with appropriate absorptive capacity
Todo (2006)	The size of R&D of domestic firms enhances positive spillovers
Branstetter (2006)	Positive knowledge spillovers strongest through R&D
Girma and Wakelin (2007)	Positive effect of absorptive capacity has a regional dimension
Sembenelli and Siotis (2008)	Positive spillovers among R&D intensive industries
Blake et al. (2009)	Positive spillovers directly related to domestic firms R&D expenditure per capita
Qi et al. (2009)	Absorptive capacities across provinces affect spillovers
Zhao and Zhang (2010)	Complementarity between human capital of domestic firms and spillover effects
Chen et al. (2010)	Absorptive capacity required for spillover occurrence

Technological gap

The notion that technological gap between domestic firms and MNCs could affect spillovers, is related to the absorptive capacity hypothesis. But rather than assume that the absolute capacity of domestic firms to absorb spillovers as a determinant, the technological gap hypothesis compares the technological ability of domestic firms with that of MNCs. Empirical literature shows that both small and large technological gaps can affect spillovers in different directions. A widely held view is that the small technological gaps enhance positive spillovers. Thus this view supports the absorption hypothesis, as a small technology gap implies higher absorption capacity. Kokko et al. (1996) found positive and highly

significant effect of foreign presence on Uraguayan manufacturing firms with small technology gaps with MNCs, while no spillovers were observed among firms with large technology gaps, between 1998 and 1990. Similarly, Girma and Wakeline (2000) found that technological spillovers from MNCs to Uk firms are easier when technology gaps are small. Dimelis (2005) also show that Greek firms with small technology gaps have larger positive spillovers from FDI, while firms with large technology gaps experience negative spillovers.

In the same line of thought, some studies find that large technology gaps between domestic and foreign reduce positive spillovers or enhance negative spillovers. Takii (2005) found negative spillovers among Indonesian firms with large technology gaps, using panel data for the period 1990-1995. Similar results were obtained in Le and Pomfret (2011) where negative spillovers existed among Vietnamese firms with large technology gaps. In the same vein, Todo (2006) found that the extent of positive spillovers to Japanese firms is reduced among firms with large technology gaps. Blalock and Gertler (2008) also find that positive spillovers are diminished among Indonesian firms with large technology gaps. Their results are in line with Holstein (2010), where technological distance between foreign and domestic firms in 23 countries results in reduced spillovers, and the emergence of negative spillovers (inverted U-shape relationship).

However, the contrasting view that large technological gaps enhance positive spillovers exists in literature. The view is in line with the assertion by Findley (1978) that technologically deprived industries or regions are better positioned to benefit from positive spillovers from FDI. This notion is referred as “catching-up” hypothesis. Sjohlm (1999) found positive spillovers among Indonesian firms with large technology gaps. Castellani and Zanfei (2003) also found a positive relationship between technology gaps and extent of positive spillovers among firms in France, Italy and Spain. Peri and Urban (2006) showed positive and significant effect of large technology gaps on the extent of spillovers on 800 German and Italian firms over the period 1993-1999.

Some studies also find no effect of technology gaps on spillovers. Aslanoglu (2000) found no evidence of technology gap impact on the extent of spillovers in 500 Turkish firms. Similarly, Vahter (2011) also show that technology gaps have no effect on spillovers among Estonian manufacturing firms.

Table 5.3 Effect of technology gap on spillovers

Author	Effect of technology gap
Kokko et al. (1996)	Small tech gaps enhance positive spillovers
Sjoholm (1999)	Large tech gaps enhance positive spillovers
Aslanoglu (2000)	No effect of tech gaps on spillovers
Girma and Wakelin (2000)	Small tech gaps enhance positive spillovers
Castellani and Zanfei (2003)	Large tech gaps enhance positive spillovers
Takii (2005)	Large tech gaps enhance negative spillovers
Dimelis (2005)	Small tech gaps enhance positive spillovers; Large tech gaps enhance negative spillovers
Peri and Urban (2006)	Large tech gaps enhance positive spillovers
Todo (2006)	Large tech gaps diminish positive spillovers
Jordaan (2008)	Large tech gaps enhance positive spillovers
Blalock and Gertler (2008)	Large tech gaps diminish positive spillovers
Nicolini and Resmini (2010)	Small tech gaps diminish positive spillovers
Holstein et al. (2010)	Large tech gaps diminish positive spillovers
Vahter (2010)	No effect of tech gaps on spillovers
Le and Pomfret (2011)	Large tech gaps enhance negative spillovers
Todo et al. (2011)	Large tech gaps enhance positive spillovers

Domestic firm orientation/sector

The direction and extent of spillovers can be affected by the orientation of domestic firm operation, as well as the sector. This is linked to the absorptive capacity hypothesis, as the orientation in operation determines the ability of domestic firms to absorb spillovers. Wang and Hu (2007) found negative spillovers among labour-intensive industries in China, while technology-intensive industries experienced no spillover effect. This is in direct contrast to Fillat and Woerz (2011), where positive spillovers were obtained among labour and resource intensive firms in a sample of 35 countries. In the same vein, Nicolini and Resmini (2010) found positive spillovers in low-tech firms in an unbalanced panel of 50,000 firms in Bulgaria, Poland, and Romania. This conflicts with the results of Le and Promfret (2011), where negative spillovers were obtained using Vietnamese data.

Similar to the domestic firm orientation effect on spillovers, is the sector in domestic firms operate. Akulava and Vakhitova (2010) found positive horizontal spillovers among Ukrainian firms in the secondary sector; while no backward or forward spillovers were found in the same sector. No spillver effects were found in the primary and services sector.

Table 5.4 Effect of domestic firm orientation/sector on spillovers

Author	Effect of dom. Firm orientation/sector
Wang and Hu (2007)	Negative in labour-intensive industries; No spillovers in technology-intensive industries
Nicolini and Resmini (2010)	Positive spillovers in low-tech firms
Akulava and Vakhitova (2010)	Positive horizontal spillovers in secondary sector; No spillovers in primary and services sector
Le and Pomfret (2011)	Negative spillovers in low-tech industries
Fillat and Woerz (2011)	Positive spillovers in labour and resource intensive industries

Spillovers and MNC characteristics

Ownership/Origin of MNC

The search for an explanation for the varied empirical results of FDI spillover investigation has also led to a closer examination of the characteristics of MNCs that potentially transmit productivity spillovers. The degree of ownership of MNCs is deemed to influence the extent and/or direction of spillovers. Djankov and Hoekman (2000) obtained positive spillovers from joint ventures on Czech domestic firms. Similarly, Dimelis and Louri (2002) found that effect of foreign presence on low and medium productivity domestic Greek firms emanate from minority foreign owned firms. Javorcik (2004) found positive backward spillovers from partially owned MNCs in Lithuania, and no spillovers from fully owned foreign firms. Similar results of positive spillovers through backward linkages were obtained on Romanian firms in Javorcik and Spatareanu (2008). Dimelis and Louri (2004) show that positive spillovers from minority foreign owned firms are only observable among small domestic Greek firms.

In the same line of thought, some studies show that majority of wholly owned foreign firms diminish positive spillovers or exude negative spillovers. Takii (2005) found that higher foreign ownership of MNCs reduce the extent of positive spillovers among Indonesian firms, while Khalifah and Adam (2009) showed that wholly foreign firms transmit negative spillovers to domestic Malaysian firms. However, in direct contrast, Sinani and Meyer (2004) show that the positive effects of spillovers on Estonian firms come from majority foreign owned firms. Early studies like Blomstrom and Sjoholm (1999) and Kinoshita (2000) found no effect of the degree of foreign ownership on domestic firms in Indonesia and Czech Republic respectively.

Table 5.5 Effect of MNC degree of ownership on spillovers

Author	Effect of MNC degree of ownership
Blomstrom and Sjoholm (1999)	No effect of degree of ownership
Djankov and Hoekman (2000)	Positive spillover from joint ventures
Kinoshita (2000)	No effect of degree of ownership
Dimelis and Louri (2002)	Positive spillovers from minority y foreign owned MNCs to low and medium productivity domestic firms
Javorcik (2004)	Positive backward spillovers from partially owned foreign firms; No spillovers from fully foreign owned firms
Sinani and Meyer (2004)	Positive spillovers from majority foreign owned firms
Takii (2005)	Majority foreign owned firms diminish positive spillovers
Javorcik and Spatareanu (2008)	Positive backward spillovers from partially owned foreign firms
Khalifah and Adam (2009)	Negative spillovers from wholly foreign owned firms

Another hypothesis in literature is that the origin of MNCs affects the direction and extent of spillovers in domestic firms. The idea is related to that of technology gaps, as MNCs from different countries differ in technological levels and thus technology gaps with domestic firms will differ. Thus as level of technology gaps is deemed to have impact on spillovers, the origin of MNC which can affect technology gaps would be expected to have an indirect impact on spillovers. Girma and Wakelin (2000) found that FDI from Japan has the highest negative spillover effect on UK firms compared to the U.S and other countries. Similarly, Kosteas (2008) investigation on Mexican firms obtained relatively higher positive spillover effects of FDI from Canada than those form the US and the rest of the world. In studies based on China, Abraham et al. (2010) and Du et al. (2011) found that export driven FDI from Hong Kong, Macau and Taiwan have no spillover effects on domestic firms. Furthermore, Javorcik and Spatareanu (2010) found backward linkages from FDI from American Romanian supplying industries. Also, Monastiriotis and Alegria (2001) found that Greek MNCs provide lager positive spillovers on Bulgarian firms than those from other nationalities.

Table 5.6 Effect of MNC origin on spillovers

Author	Effect of MNC origin
Girma and Wakelin (2000)	Highest negative spillover effect from Japanese MNC
Kosteas (2008)	Canadian MNCs provide higher positive spillover effects than US and the rest of the world
Abraham et al. (2010)	No spillovers from FDI from Hong Kong, Macau, and Taiwan
Du et al. (2011)	No spillovers from FDI from Hong Kong, Macau, and Taiwan
Javorcik and Spatareanu (2010)	Positve backward spillovers from American MNCs
Monastiriotis and Alegria (2011)	Positive spillovers from Greek MNCs

MNC motivation/orientation

Another determinant of spillovers is the motivation or orientation of MNCs prior to entry into the host country. This is also linked to the type of MNC, its industry, and its country of origin. Girma (2005) found positive spillovers among "Technology-sourcing" MNCs in the UK increases with the absorptive capacity of the sector. In direct contrast, Driffield et al. (2009) found the presence of "Technology-sourcing" MNCs results in negative spillovers, using industry level data of 13 countries. Furthermore, Li et al. (2001) found that "market-oreinted" MNCs results in positive spillovers, while "export-oriented" MNCs have no spillover effect. This is in contrast to the findings of Kokko et al. (2001) and Girma et al. (2008), where export-oriented MNCs generate positive spillovers in Uraguay and UK respectively.

A similar argument is that the operational orientation of the MNC affects spillover effects. Sinani and Meyer (2004) found that labour-intensive MNCs generate larger spillovers in Estonia, than equity intensive MNCs. However, Gorg et al. (2006) found no spillover effect from labour intensive MNCs, but positive spillovers from capital and material intensive spillovers.

Table 5.7 Effect of MNC motivation/orientation on spillovers

Author	Effect of MNC motivation/orientation
Li et al. (2001)	Positive spillovers from market-oriented MNCs; No spillovers from export oriented
Kokko et al. (2001)	Positive spillovers from export-oriented MNCs
Girma (2005)	Positive spillovers from technology-sourcing MNCs
Driffield et al. (2009)	Negative spillovers from technology sourcing
Sinani and Meyer (2004)	Positive spillovers from labour and sales intensive MNCs larger than equity-intensive MNCs
Gorg et al. (2006)	No spillover effect from labour-intensive MNCs; Positive spillovers from capital and material intensive MNCS
Girma et al. (2008)	Positive spillovers from export-oriented MNCs

5.2.4 Spillovers and host-country characteristics

Country-specific factors have been identified in empirical literature as important determinants of spillovers. Distribution of both domestic firms and MNCs differ across countries. Some countries have industries clustered in a particular zone. Such zones could be special economic or export zones marked out by the national governments to promote specific goals. The homogeneity or heterogeneity in the distribution of such zones across countries could explain the similarity or dissimilarity of the extent and direction of spillovers. Driffield et al. (2004) found that positive spillovers are stronger in "non-assisted" areas, i.e. regions in the UK that do not receive subsidies or grants from the government. This is similar to the findings by Girma and Wakelin (2000, 2007), that found that regions in the UK with Government assistance experience less positive spillovers from FDI. Abraham et al. (2010) also found similar results for Chinese firms, where positive spillovers occurred only in special economic zones that were purposefully created to attract FDI.

The concentration of industries in a specific area or region can also enhance positive spillovers. De Propris and Driffield (2006) obtained positive spillover results among "cluster-areas" in the UK (regions geographically agglomerated with smes), while negative spillover results were obtained for "non-cluster-areas". This is similar to the findings by Mariotii et al. (2011), where industries that are "co-located" experienced stronger positive spillovers. A similar line of thought is the notion that the geographic distance between domestic firms and MNCs can affect the extent and direction of spillovers. Lu et al. (2009) found positive spillovers among domestic firms located close to MNCs in China, while negative

spillover results were obtained for those in remote areas. However, Vahter (2010) found no effect of geographical proximity of domestic and foreign firms on spillovers in Estonia.

Table 5.7 Effect of regional characteristics on spillovers

Author	Effect of regional characteristics
Girma and Wakelin (2000)	Positive spillovers are diminished in "assisted-areas"
Driffield et al. (2004)	Positive spillovers in "non-assisted" areas
De Propris and Driffield (2006)	Positive spillovers in cluster areas; Negative spillovers in non-cluster areas
Girma and Wakelin (2007)	Less positive spillovers among Government assisted zones
Abraham et al. (2010)	Positive spillovers only in special economic zones
Mariotti et al. (2011)	Positive spillovers through co-location
Lu et al. (2009)	Positive spillovers among nearby dom. Firms; Negative spillovers among remote dom. Firms
Vahter (2010)	No geographical proximity effect

Table 5.8 Studies and Spillover determinants

Author	Data	Country	Aggregate	Dependent variable	Estimation Technique	Effect on spillovers
Kokko et al. (1996)	289 plants in Uraguayan manufacturing sector , 1988-1990	Uraguay	plant level	Value added/emp model	OLS	Small tech gaps enhance positive spillovers
Sjoholm (1999)	24,468 establishments for 1980 and 1991	Indonesia	firm-level	Value added/emp	OLS	Large tech gaps enhance positive spillovers
Blomstrom and Sjoholm (1999)	16, 494 establishments in 329 industries at a 5-digit level for 1991	Indonesia	firm-level	vadded/emp	OLS	No effect of degree of ownership
Kathuria (2000)	368 large-sized firms belonging to 26 sectors for 14 yrs - from 1975-76 to 1988-89	India	firm-level	Gross value added; Change in relative technical efficiency	OLS	Positive spillovers among Scientific subgroup that invest in R&D
Kinoshita (2000)	1217 observations, 1995-1998 - Unpublished panel data	Czech Republic	firm-level	value added	OLS	Positive spillovers only when domestic firms invest in R&D; No effect of degree of ownership
Kokko et al. (2001)	1,243 private manufacturing firms in 74 four digit industries in 1988	Uraguay	firm-level	Value added/emp	OLS	Positive spillovers from export-oriented MNCs
Aslanoglu (2000)	500 firms in 28 sectors in 1993	Turkey	firm-level	Value added/emp	OLS	No effect of tech gaps on spillovers
Girma and Wakelin (2000)	firm level panel dataset of over 3700 domestic fims in the UK manufacturing over the period 1988-1996	UK	firm-level	Output model	OLS	Small tech gaps enhance positive spillovers; Highest negative spillover effect from Japanese MNC
Djankov and Hoekman (2000)	513 firms quoted on the Prague Stock exchange, 1992 - 1996	Czech Republic	firm-level	Gross Output	OLS Fixed/Random effects estimation	Positive spillover from joint ventures
Li et al. (2001)	191 sub-manufacturing sectors in China State Statistical Bureau of China, 1997	China	Industry	Value added per employee	3 stage least squares ;OLS - for comparison	Positive spillovers from market-oriented MNCs; No spillovers from export oriented
Barrios and Strobl (2002)	2,100 Spanish manufacturing	Spain	firm-level	TFP	OLS Fixed Effects	Positive spillover only on forms with

	firms for the period 1990-1998					appropriate absorptive capacity
Schoors and van der Tol (2002)	1084 firms in 1997 and 1998 Used as cross-section of firms	Hungary	firm-level	Labour productivity - output/emp	OLS Treatment effects model	Positive effect of absorptive capacity on spillovers in open sectors
Dimelis and Louri (2002)	4,056 manufacturing firms in Greece in 1997	Greece	firm-level	Labor productivity – output per worker	OLS Quantile regression	Positive spillovers from minory foreign owned MNCs to low and medium productivity domestic firms
Castellani and Zanfei (2003)	Panel data of 3932 firms over the period 1992-1997	France, Italy, and Spain	firm level	Output	OLS Fixed Effects	No effect of absorptive capacity on spillovers; Large tech gaps enhance positive spillovers
Keller and Yeaple (2004)	1,115 US owned firms that were active 1987-1996	U.S.	firm level	TFP	Olley and Pakes (1996) OLS	Positive spillovers only in high-tech firms with appropriate absorptive capacity
Javorcik (2004)	1918-2711 firms btw 1996-2000 Source: Lithuanian Statistical Office	Lithuania	firm level	Output	OLS Olley and Pakes (1996) semi-parametric estimation	Positive backward spillovers from partially owned foregn firms; No spillovers from fully foreign owned firms
Sinani and Meyer (2004)	294-434 firms, 1994-1999	Estonia	firm level	Output	Fixed effects Generalized Least Squares (GLS)	Positve spillovers from majority foreign owned firms; Positive spillovers from labour and sales intensive MNCs larger than equity-intensive MNCs
Driffield et al. (2004)	Industry and regional level data on 20 manufacturing sectors in the UK, covering 1984-1997	UK	Industry	Output	GMM estimator	Positive spillovers in "non-assisted" areas
Girma (2005)	7,516 companies over the period 1989 to 1999	UK	firm level	Output; TFP	GLS-AR(1) - Generalized Least Squares estimator with first-order autoregressive error	Positive spillovers only in high-tech firms with appropriate absorptive capacity; Positve

						spillovers from technology-sourcing MNCs
Takii (2005)	sample of Indonesian firms, 1990-1995	Indonesia	firm level	Value added	Fixed effects	Large tech gaps enhance negative spillovers; Majority foreign owned firms diminish positive spillovers
Dimelis (2005)	2,589 firms, 1995-1997	Greece	firm level	Output	OLS	Small tech gaps enhance positive spillovers; Large tech gaps enhance negative spillovers
Todo (2006)	Panel data of 21,404 observations of Japaneses manufacturing firms over the period 1995-2002	Japan	firm level	TFP	OLS Instrumental Variable (IV) estimation	The size of R&D of domestic firms enhances positive spillovers; Large tech gaps diminish positive spillovers
Branstetter (2006)	Unbalanced panel data set for 189 Japanese firms for the years 1980-1997	Japan	firm level	Number of citations made by the U.S. patent applications of Japanese firm i in year t to indigenous U.S. patents	Binomial fixed effects regressions	Positive knowledge spillovers strongest through R&D
Peri and Urban (2006)	unbalanced panel of 800 manu firm, 1993-1999	Germany and Italy	firm level	TFP	OLS Fixed Effects Levinsohn and Petrin (2003) Superlative index Efficiency frontier GMM	Large tech gaps enhance positive spillovers
Gorg et al. (2006)	Panel data on Hungarian manufacturing firms for the period 1995-2001 Source: Officially reported balance sheet data	Hungary	firm level		OLS	No spillover effect from labour-intensive MNCs; Positive spillovers from capital and material intensive MNCS
De Propris and Driffield (2006)	23 manufacturing sectors, 11 standard planning regions covering 1993-1998	Uk	Industry	Value added	GMM estimator	Positive spillovers in cluster areas; Negative spillovers in non-cluster areas
Girma and Wakelin (2007)	Unbalanced panel of 2,773 establishments over the period 1980-1992	UK	firm level	Output; TFP	Olley and Pakes (1996) method OLS Fixed Effects GMM	Positve effect of absorptive capacity has a regonal dimension

Wang and Hu (2007)	196 three-digit sectors Source - annual report of China for 2001, complied by the State Statistical Bureau	China	Industry - prefered bcos spillovers are cmmonly hypothesized to fall along industry or regional lines	Sales	OLS	Negative in labour-intensive industries; No spillovers in technology-intensive industries
Sembenelli and Siotis (2008)	29,318 observations, unbalanced panel, varying each year btw 1983 and 1996	Spain	firm-level	Profitability	GMM	Positive spillovers among R&D intensive industries
Jordaan (2008)	aggregate plant level observations to the detailed 6-digit industry	Mexico	firm level	labour productivity	OLS	Large tech gaps enhance positive spillovers
Blalock and Gertler (2008)	Unbalanced panel of 15,800 firms over the period 1988-1996	Indonesia	firm level	Output	Fixed Effects Olley-Pakes estimation	Large tech gaps diminish positive spillovers
Javorcik and Spatareanu (2008)	13,129 firms in 48 industries btw 1998-2003	Romania	firm level	Cobb-Douglas p.f. - TFP model	OLS Levinsohn-Petrin approach	Positive backward spillovers from partially owned foregn firms
Kosteas (2008)	3218 Mexican manufacturing plants from 1984-1990 - ownership information is only available for 1990	Mexico	plant level	value of production	Olley-Pakes estimator (well explained)	Canadian MNCs provide higher positive spillover effects than US and the rest of the world
Girma et al. (2008)	Unbalanced panel of 4,600 firms over the period 1992-1999	U.K.	firm level	Output; TFP	Olley and Pakes (1996) method - for calculating TFP measure	Positive spillovers from export-oriented MNCs
Blake et al. (2009)	998 Chinese firms in 5 manufacturing industries in 2000 - cross section	China	firm level	Value added; TFP	OLS	Positive spillovers directly related to domestic firms R&D expenditure per capita
Qi et al. (2009)	panel data of domstic industrial enterprises in 30 provinces in China	China	firm level	Malmquist productivity TFP index	Fixed Effects Random Effects	Absorptive capacities across provinces affect spillovers
Khalifah and Adam (2009)	Panel dataset of 20,455 establishments over the period 2000-2004	Malaysia	firm level	labour productivity - value added/emp	OLS Fixed Effects/Random Effects	Negative spillovers from wholly foreign owned firms
Driffield et al. (2009)	Panel of 13 countries, 11	UK	Industry	TFP	GMM estimator	Negative spillovers from technology

	manufacturing sectors and 10 years Sourced from ONS and OECD data					sourcing
Lu et al. (2009)	162,000-270,000 firms over the 1998-2005	China	firm level	Output	OLS Levinsohn and Petrin (2003)	Positive spillovers among nearby dom. Firms; Negative spillovers among remote dom. Firms
Zhao and Zhang (2010)	panel data of 39 industrial sectors, over the period 2001-2006	China	industry level	Value added	OLS	Complementarity between human capital of domestic firms and spillover effects
Chen et al. (2010)	panel data of 195 four digit industries, over the period 2000-2005	China	industry level	Value added per employee	Fixed Effects FEVD - estimated by bootstrapping Seeming unrelated regression system (SUR)	Absorptive capacity required for spillover occurrence
Nicolini and Resmini (2010)	unbalanced panel of 50,000 manufacturing firms operating in 3 transition countries: Bulagaria, Poland, and Romania; over the period 1998-2003	Bulagaria, Poland, and Romania	firm level	Output ; TFP	OLS Olley and Pakes (1996)	Small tech gaps diminish positive spillovers; Positve spillovers in low-tech firms
Holstein et al. (2010)	cross-sectional data from 6.7 million firms, from 211 goegraphic regions, within 23 countries	23 counries	firm level	Value added	GLS	Large tech gaps diminish positive spillovers
Vahter (2010)	Two surveys; 1,185 and 1,264 dom owned firms in Estonian manufacturing over the period 1998-2000 and 2002-2004 respectively	Estonia	firm level	TFP; labour productivity	2SLS- IV Fixed Effects TFP is estimated with Levinsohn-Petrin (2003) method	No effect of tech gaps on spillovers
Abraham et al. (2010)	unbalanced panel of 23,613 firms over the period 2002 and 2004	China	firm level	output/TFP model	Olley and Pakes (1996) OLS Fixed Effects	No spillovers from FDI from Hong Kong, Macau, and Taiwan
Javorcik and Spatareanu (2010)	45,864 firm-year observations, over the period	Romania	firm level	TFP model	semiparametric approach suggedsted by Ackerberg, Caves	Positve backward spillovers from American MNCs

	1998-2003				and Frazer (2006) built on the work Olley and Pakes (1996) and Levinsohn and Petrin (2003)	
Akulava and Vakhitova (2010)	unbalanced panel of 10,046-15,724 firms, over the period 2001-2007 Source: Ukranian Statistical Committee	Ukrain	firm level	Output	Pooled OLS Fixed/Random Effects	Positive horizontal spillovers in secondary sector; No spillovers in primary and services sector
Le and Pomfret (2011)	unbalanced panel of 8,601 firms, over the period 2000-2004	Vietnam	firm level	Labour productivity - gross output to total employees	OLS	Large tech gaps enhance negative spillovers; Majority foreign owned firms diminish positive spillovers;Negative spillovers in low-tech industries
Todo et al. (2011)	panel data on Chinese firms, over the period 2000-2003	China	firm level	Value added	GMM	Large tech gaps enhance positive spillovers
Du et al. (2011)	162,033-336,768 firms, over the period 1998-2007	China	firm level	output model	OLS Fixed Effects Olley and Pakes (1996) method	No spillovers from FDI from Hong Kong, Macau, and Taiwan
Monastirioti s and Alegria (2011)	around 14,000 firms for the period 2002-2005	Bulgaria	firm level	output (total sales)	OLS Fixed Effects IV-FE	Positive spillovers from Greek MNCs
Fillat and Woerz (2011)	highly unbalanced data of 8 industries in 28-35 countries, over the period 1987-2000 Source: UNIDO Statistics database; OECD International Direct Investment database; ….etc	35 countries	industry level	labour productivity - gross output per employee	GLS System-GMM	Positive spillovers in labour and resource intensive industries
Mariotti et al. (2011)	panel of 76,507 manufacturing firms in 23 industries, over the period 1999-2005	Italy	firm level	TFP	Levinsohn and Petrin (2003) Fixed Effects	Positove spillovers through co-location

5.3. Review of empirical literature on impact of foreign presence on domestic banks

5.3.1 Dealership models

The underpinnings of the empirical investigation of foreign bank entry are based on theoretical models of bank performance introduced in the eighties, known as dealership models. The models assume that a bank is a "risk averse dealer" facing the risk of time asymmetry for the demand for loans and the supply of deposits (Angbazo, 1997). This section highlights the various versions of the dealership model from the pioneer work by Ho and Saunders (1981), to the extensions carried out by Allen (1988), Angbbazo (1997), and Maudos and Guevara (2004). This study also shows that most empirical work on the impact of foreign presence/entry on bank performance employ different forms of augmented dealership models.

The dealership model assumes a bank as a risk-averse "dealer" in the credit market faced with the uncertainty that results from the non-synchronous nature of demand for loans and supply of deposits (Ho and Saunders, 1981). This non-synchronous characteristic of loans and deposits is as a result of differences in maturity times and sensitivity to interest rates. In other to offset the costs of the uncertainty, banks demand a premium to provide on-time loan and deposit services. This premium for the service is evident as interest margins or spreads. Ho and Saunders (1981) provided the first comprehensive analysis of the determinants of interest margins using the dealership model. A key assumption of the model is that loans and deposits are homogenous.

In their model, they show that a bank is assumed to have three components in their wealth portfolio, W:

$$W = Y + I + C \quad (1)$$

Where Y is the base wealth; I is the difference between the value of loans and deposits, called the net credit inventory; C is net cash or money market position, defined as the difference between money market loans and borrowings. Equation (1) can be specified in terms of their expected returns:

$$W = (1+r_y)Y_0 + Y_o z_y \quad (2)$$

$$I = (1+r_I)I_0 + I_o z_I \quad (3)$$

$$C = (I+r)\, C_0 \quad (4)$$

where r_y, r_I, and r represent expected returns on wealth, Inventory and net cash respectively. Wealth and Inventory consist of random variables that affect the rates of return z_y and z_I. The bank is assumed to be a passive dealer, capable of altering prices which affect the demand for loans and deposits. Thus

P_L= p – b; P_D= p +a; P_D- P_L= a + b = s (5)

Where $P_D$and $P_L$denote prices of deposits and loans which are set constant for the period in question, p is the bank's conjecture of the actual price of loan or deposit; a and b are the fees for the on-time services delivered by the bank. The loan and deposit prices $P_L$and $P_D$are negatively related to rates, but positively related to the fees (a and b) which are manipulated to determine the interest spread (a + b). By manipulating the fees, the bank can control the demand for loans and deposits in such a manner that the transaction risk created by the stochastic nature of loans and deposits can be mitigated by these fees or spreads. By specifying the expected utility of wealth by the bank, Ho and Saunders (1981) show that bank spreads depend on the extent of managerial risk aversion, size of transactions undertaken by bank, structure of bank market, and the variability of interest rates. The empirical application by Ho and Saunders (1981) involved accounting for market imperfections which consists of implicit interest on deposits (IR), opportunity cost of holding reserve requirements (OR), and default risk on loans (DP).

$M_i = \delta_0 + \delta_0 IR_i + \delta_2 OR_i + \delta_3 DP_i + U_i$ (6)

Where δ_0 is the pure spread which exists due to transaction uncertainty. Ho and Saunders (1981) measured (1) with the following accounting variables: M is measured as interest income – interest expense/total assets; IR is the total noninterest expense – total noninterest revenue/total earning assets; OR is the total noninterest bearing reserve assets/total earning assets; and DP is the net loan charge-offs/ total earning assets.

The major difference between the Ho-Saunders version of the dealership model and that of Allen (1988) was the relaxation of the assumption of homogenous loans and deposits to account for cross-elasticities that may exist between bank products. Allen's model considers two kinds of loans: m and n which the bank can manipulate the spreads such that a rise in demand for one type of loan implies the fall in demand for the other, thus substitution effect exists. Its main contribution was therefore to show that the when cross elasticities of demand between bank products are accounted for, pure interest spreads are likely to reduce.

Angbazo (1997) approach towards the dealership model was to extend the Ho-Saunders model and incorporate loan default risk and interest rate risk. Thus the model accounts for risk neutral spread which is directly related to monopoly power, pure default risk, money market interest rate volatility, and the interaction of default risk with interest rate volatility. Empirical specification of the Angbazo model involves specifying net interest margins (NIM) as a function of the pure spread $S_{it}^{*}(.)$, bank specific variables X_{it}which are deemed to affect NIM, and an error termε_{it}. Thus

NIM = F ($S_{it}^{*}(.)$,X_{it}, ε_{it}) (7)

From (7), NIM can be expressed as a function of default risk, interest rate risk, Default *Interest risk, liquidity risk, capital base, implicit payments, noninterest earning reserves, management, branching. Default risk can be measured as net charge offs; interest rate risk exposure can be measured as (Net fed funds sold + Trading account securities + Securities maturing in less than one year + Customers liabilities to bank due to outstanding acceptances) – (Domestic and foreign deposits + Other borrowed money + bank liabilities on customers' acceptances outstanding); Liquid risk can be measured as ratio of liquid assets to liabilities; capital base can be measured as core capital/total assets (risk of solvency); Implicit interest payments can be measured as non-interest expense – non-interest revenue/ average earning assets; Non interest bearing reserves can be measured as non-interest bearing assets/average earning assets; Management quality can be measured as the ratio of earning assets to total assets.

Further extension of the Ho-Saunders model was undertaken in Maudos and Guevara (2004). The major contribution of the Maudos-Guevara model was the inclusion of operating costs as a determinant of interest margins. Their model was developed from the criticism of the Ho-Saunders model by Lerner (1981) which argued that intermediation process carried out by banks involve operating costs. These cost are related to deposits and loans, and thus the net credit inventory can be expressed as a function of thesis costs: C(I) = C(L) + C(D).Their model shows that these operating costs are positively related with margins. The theoretical determinants of interest margin according to the Modus and Guevara (2004) model therefore accounts for competitive structure of markets (elasticity of demand for loans and supply of deposits), operating costs, risk aversion, money market interest rate volatility, credit risk, interaction between interest rate risk and credit risk, average size of credit and deposit operations, payment of implicit interest, opportunity cost of keeping reserves, and the quality of management

Empirical modeling of the impact of foreign presence on bank performance in literature typically involves the augmentation foreign bank presence measures as a determinant of margins in dealership

models (Poghosyan, 2010). However, analysis on the impact of foreign entry on bank performance goes beyond the use net interest margin/spread as an indicator of performance, to include other performance measures such as return on assets (ROA), Before-tax profits, Non-interest income, overhead costs, among others.

Unlike the case of FDI spillovers in the manufacturing sector, empirical investigation of the impact of foreign presence on domestic banks is limited in amount of literature available. The investigation typically involves the augmentation of bank performance models to include a measure of foreign presence. In general, evaluating the performance of banks has been focused on specific aspects. These include: earnings, efficiency, risk-taking, and leverage (ECB, 2010).However empirical literature on bank performance show that the choice of accounting measures for these aspects differ according to the nature of investigation carried out. Thus despite the abundance of different accounting measures of bank performance, the empirical model employed depend on the sought of enquiry being made. Literature on the impact of foreign entry/presence on bank performance focuses on measures of profitability, income, and costs. Thus the following accounting identity derived from a bank's Income Statement is widely used[13] :

Before Tax Profits/Total assets = (Net Interest Margin + Non-interest income – Overheads – Loan Loss provisioning)/Total assets

Narrowing down the investigation of the effect of foreign presence on domestic banks is a relatively new direction of research (Okuda and Rungsomboon, 2007; Naaborg, 2007). This section therefore reviews literature on the effect of foreign entry on different measures of bank performance by examining the findings of different empirical studies

[13] Demirguc-Kunt and Hinga (1999) and Claessens et al. (2001) are among the notable studies that are based on the accounting identity.

5.3.2. Foreign presence and profitability

Three measures of profitability dominate empirical literature on bank performance: Net interest margins (NIM), Before-tax profits (BTP), and Return on Assets (ROA). According to Aiber (1984), foreign banks can offer lower interest rates on loans and higher rates on deposits in an attempt to compete with domestic banks. This could lead to a general decline in interest income as domestic banks struggle to maintain the size of their loan portfolio, and a rise in interest expense as domestic banks try to attract new customers (Unite and Sullivan, 2003). Terrel, 1986; Bhattacharaya, 1993; Claessens et al. 2001; Cardenas, et al., 2003; Hermes and Lensink, 2004; Giannetti and Ongena, 2005 are notable studies that found that the entry of foreign banks is lead to a reduction in interest rate spreads/margins in host countries. However, Okuda and Rungsomboon (2007) show that the fall in interest spreads is experienced in the short run in Thailand. In the long run, domestic banks are likely to improve operational efficiency and develop new sources of funds which will result in an increase in spreads.

Similarly, the general notion is that competition brought about by foreign presence leads to a reduction in profits due to some loss in market share to foreign banks (Terrel, 1986; Caprio, et al., 2001; Cardenas et al. 2003; Hermes and Lensink, 2004; Giannetti and Ongena, 2005; Uiboupin, 2005). Competition drives domestic banks to seek other means of revenue other than tradition banking methods (Unite and Sullivan, 2003). Bhattacharaya (1993) points out that the fall in profits would arise from the convergence of prices towards marginal costs as a result of increased competition. However, Okuda and Rungsomboon (2007) show that in the long run, domestic banks would find alternative sources of revenue and undergo efficiency improvements which results in a rise in profits in Thailand banking industry. Lensink and Hermes (2004) found that the effect of foreign entry on domestic banks is ambiguous, since both costs and margins increase simultaneously in their cross-country study of 48 countries.

Studies using ROA as a measure of profitability show rather contrasting results. Shen et al. (2009) found a positive relationship between foreign presence and ROA among 48 banks in China, while Wu et al. (2007) found no effect of foreign presence on ROA of 14 Chinese banks.

5.3.3. Foreign presence and overhead costs

Foreign presence is viewed as medium of promoting efficiency which would lead to fall in operating expenses (Bhattacharaya, 1993; Berger and Hannan, 1998; Claessens et al. 2001; Hermes and Lensink, 2004). The entry of foreign banks is expected to put pressure on domestic banks which may be engaged in outdated or inefficient practices, making them improve/update their operational and managerial structures in order to remain competitive in the industry (Claessens et al. 2001; Unite and Sullivan, 2003; Hermes and Lensink, 2004). This is based on the assumption that foreign banks are more efficient in providing financial services than the domestic banks in the host country. However, empirical literature does not fully support the inverse association between foreign presence and bank overhead costs. Claessens et al., (2001) and Unite and Sullivan, (2003); and found negative significant effects of foreign presence on costs, while Liuhto et al. (2006) and Okuda and Rungsomboon (2007) found both negative and positive effects

Okuda and Rungsomboon (2007) argue that the decreases in operational costs of domestic banks are only experienced in the long term, but in the short term, a rise in operational costs will be the case as they would have to invest funds to achieve increased efficiency. Liuhto et al. (2006) found that foreign entry reduces overheads of domestic banks in advanced countries and the opposite is the case for developing countries, using a data set of 10 countries. Similarliy, Lensink and Hermes (2004), using a larger data set of 48 countries, found that a negative effect of foreign presence amongst banks in developing countries and no effect amongst developed countries. However, Xu (2011) found overall positive effect of foreign presence on overhead costs in 144 banks in China, over the period 1999-2006.

5.3.4. Foreign presence and risks

Bank risks typically involve risks associated with its basic business of lending and borrowing (Santomero, 1997). The general notion in banking literature is that increased competition in banking results in higher risk taking (Keely, 1990; Jayaratne and Strahan, 1998; Boyd and Nicolo, 2005; Dick, 2006). It is therefore expected that foreign presence which increases competition would result in greater risk exposure, especially in the short run (Claessens et al. 2001; Unite and Sullivan, 2003). The greater risk exposure is triggered by consequences of competition such as falling profit margins (Bhattacharaya, 1993; Unite and Sullivan, 2003) and the motivation of domestic banks to issue loans to relatively less creditworthy customers (Claessens, et al., 2001). In empirical literature, the most common measure of bank risk is

loan loss provisions. Loan loss provisions are non-cash expenses set aside for loan defaults or bad debts. Relative to the association of foreign presence with other measures of performance, the effect on loan loss provisions show some fair level of consistency in the results. Unite and Sullivan (2003) and Lensink and Hermes (2004) show positive relationship between foreign presence and loan loss provisions. However, Classens et al. (2001) and Luihto et al. (2006) found insignificant effects of loan loss provisions in their regressions.

In general, the common ground held in literature on foreign presence is the foreign bank entry or foreign presence brings about competition which could affect bank performance in different ways. While the direction of effect of each performance indicator variable is not clear cut, different views on for each direction of effect exist. Thus the question of how foreign presence is expected to affect each bank performance variable is an empirical question.

Table 5.9 Studies on the effect of foreign presence on bank performance

Author	Data	Country	Aggregate	Dependent variable(s)	Estimation Technique	Effect of foreign presence
Claessens et al. (2001)	7,900 commercial bank observations in 80 countries over the period 1988-1995	80 countries	bank level	Net interest margins/ta; before tax profits/ta; Non-interest earning assets/ta; Overhead/ta; Loan loss provisioning/ta	Weighted least squares	No effect on NIM; Negative effect on BTP; Negative effect on NII; Negative effect on Overhead costs; No effect on loan loss provisions
Unite and Sullivan (2003)	Sample of all domestic and foreign banks over the period 1990-1998	Philippines	bank level	Interest rate spreads; Accounting profitability; Non-interest income; Operating expenses; Risk	GMM Fixed Effects	Negative effect on spreads; Negative effect on profits; Negative effect on NII; Negative effect on operating expenses; Positive effect on risk
Lensink and Hermes (2004)	Bank level data for 48 countries for the period 1990-1996	48 countries	bank level	Net interest rate margin/ta; Before tax profits/ta; Overhead cost/ta; Loan loss provisioning/ta	Threshold estimation technique	Positive effect on NII; Positive effect on NIM; Positive effect on BTP; Positive effect on overheads; Positive effect on loan loss provisions. But when interacted with GDP: Negtive effect on NIM; Negative effect on NII; Positive effect on loan loss provisions; Profit and overheads become insignificant
Liuhto et al. (2006)	319 banks over the period 1995-2001 in 10 countries: Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Lativa, Lithuania, Poland, Slovakia, and Slovania Source: Bankscope; National Central banks	10 countries	bank level	Income of banks - Net interest margin; Non-interest income to total assets; Profitability of banks - Before tax profits to total assets Bank costs - Overhead costs to total assets; Loan loss provisions to total assets	Arellano-Bond linear dynamic panel data estimation Fixed effects OLS	Negative effect on NIM, No effect on NII; No effect on BTP; Positive effect on overheads; No effect on loan loss provisions. But when interacted with GDP: Positive effect on NIM; Negative effect on NII; Negative effect on BTP; Negative effect overheads; No effect on loan loss provisions

Okuda and Rungsomboon (2007)	panel data on 17 domestic and 4 foreign banks in Thailand, over the period 1990-2002	Thailand	bank level	Non interest expenses; Earnings before tax/ta; Diff btw interest earning ratio and the interest expense ratio	OLS	Positive effect on overheads; Negative effect on BTP; Positive effect on spreads
Wu et al. (2007)	Panel data of 14 Chinese banks, over the period 1996-2004	China	bank level	Return on Assets	Fixed/Random Effects	No effect on ROA
Naaborg (2007)	244 banks in CEE countries	CEE	bank level	Net interest revenues Overhead costs Profit before taxes	SUR, OLS	Negative effect on BTP
Shen et al. (2009)	Unbalanced panel data of 48 Chinese banks, over the period 1997-2007	China	bank level	Return on Assets Net interest ratio Net interest margin (NIM) Cost to income ratio	Least square dummy variable method (LSDV)	Positve effect on ROA; No effect on NII; Positve effect on NIM; No effect on Cost to income ratio
Poghosyan (2010)	Unbalanced data on 11 Central and Eastern countries (CEECs), over the period 1995-2006	11 Central and Eastern countries (CEECs)	bank level	Interest rate margins	Fixed Effects	No effect on NIM
Xu (2011)	114 Chinese banks over the period 1999-2006	China	bank level	Net interest margins Noninterest incomes Costs Loan loss provisions Profits	Arellano-Bond linear dynamic panel data estimation GMM	Positive effect on NIM; Positive effect on NII, Positive effect on costs
Lin (2011)	1085 non-financial publicly-traded firms with non-missing values of total assets and sales, listed on Shanghai or Shenzhen stock exchange during 2001-2005	China	firm level	Outcome variable - long-term bank loans in year t scaled by total assets	OLS	No effect on long-term loans

5.4. A comparison of literature on FDI spillovers in manufacturing and foreign bank entry effects

Despite the similarities in the theories of the effect of FDI on domestic manufacturing firms and banks highlighted in Chapter 4, their respective empirical literatures are quite different in many aspects. An obvious point is the dominance of literature on FDI spillovers in manufacturing industries relative to foreign bank entry effect studies. While FDI in manufacturing has been a focus of empirical analysis since the 70s, that of the banking industry is quite recent, with the most comprehensive paper being Claessens et al. (2001). Also, as expected from an extensively researched area, there has been considerable variation and ingenuity in modeling FDI spillover in manufacturing, as opposed to the rather homogenous foreign bank entry effect models in literature.

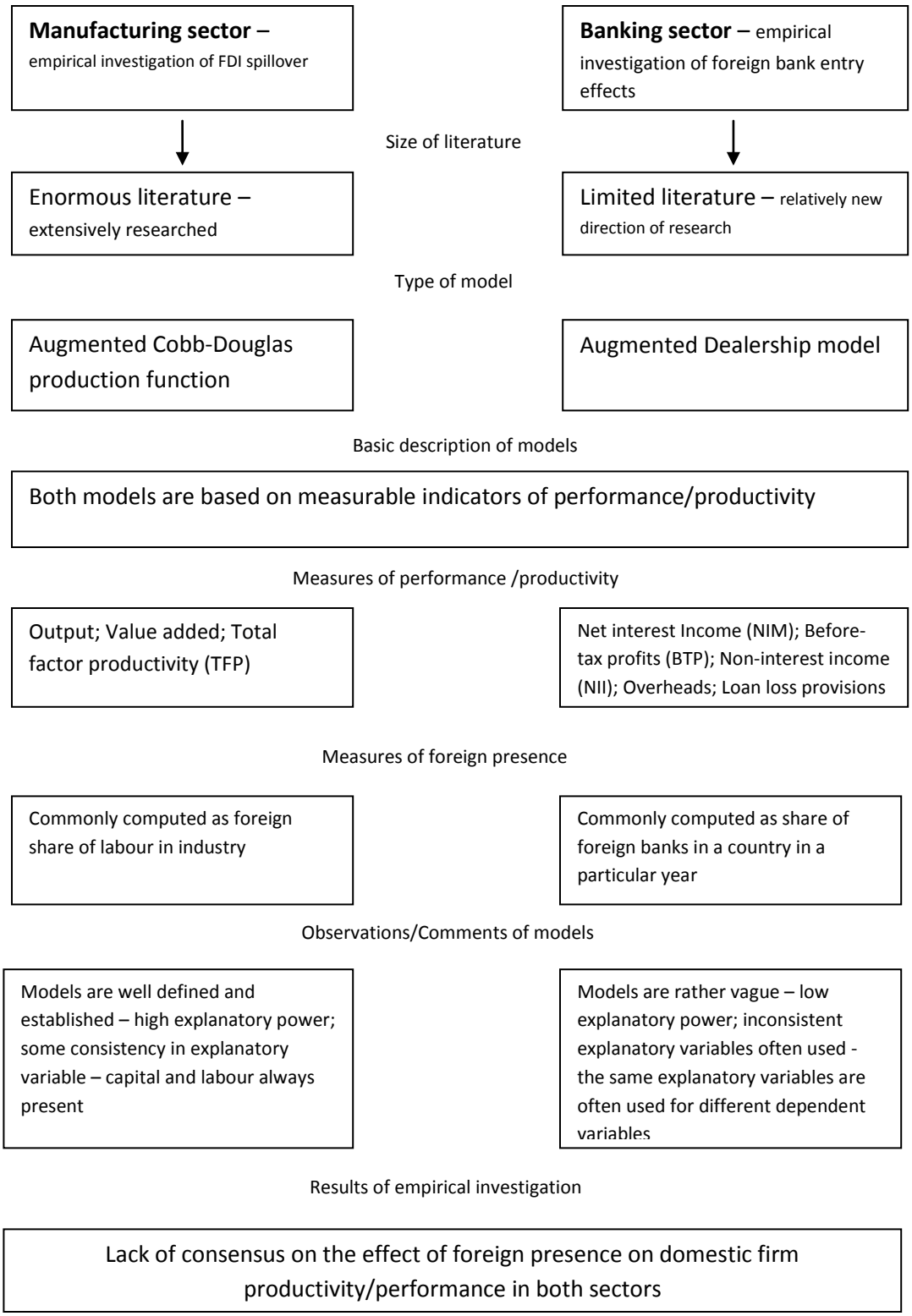
Empirical literature on both FDI in manufacturing and banks are based on the augmentation of performance or productivity models dominant in research on the sector. Thus research on FDI spillovers in manufacturing make use of different versions of augmented Cobb-Douglas production function models, while foreign bank entry effect literature deals with versions on dealership models. Measure of productivity dominant in FDI spillover in manufacturing literature include output, value added, and total factor productivity; while that of banking employs indicators of performance which include Net interest margin (NIM), Before tax profits (BTP), Return on Assets (ROA), Net interest income (NII), Overheads, and loan loss provisions. Thus unlike the manufacturing sector studies where performance is captured by measures that indicate the returns from the use of inputs, banking performance models extend performance measures to indicators of costs (Overheads) and risks (loan loss provisions). In terms of measures of foreign presence, the dominant measure in manufacturing firm literature is the foreign share of employment in each sub-industry. But banking data on this area of research are not usually categorized into different operational types. Thus the different types of banks such as investment banks and mortgage banks are considered to be in the same category. The bundled nature of banking data creates difficulty in measuring foreign presence in the bank performance models, as variation in the variable would be limited to year observations. Thus foreign presence in dealership models is usually measured as the share of foreign firms in a particular year.

In terms of ability of models to explain variations in performance or productivity, Augmented Cobb-Douglas models seem to fit the data on manufacturing firms more than dealership models fit banking data. The former seem to be well defined and established, in the sense that explanatory variables such

as capital and labour are usually present in the empirical model. However, the latter seems to be plagued with inconsistencies, as similar explanatory variables are used to explain different measures of bank performance. In some cases, some variables function as explanatory variables in one model, and dependent variable in another model. An example in the variable Overheads, used as a regressor for Before-tax Profits, but also functions as dependent variable in measuring efficiency of banks.

Figure 5.1 shows that studies on FDI on manufacturing firms differ from that of banks in some aspects. They both involve the augmentation of models of performance or productivity in their respective sectors, but their specifications differ significantly. In general, there is a lack of consensus in literature on the impact of FDI in either manufacturing firm or banks. Results from their empirical investigations show no clear pattern or convergence in direction of FDI effects on both sectors.

Figure 5.1 Comparing empirical literatures on FDI spillovers in manufacturing with foreign bank entry effects



5.5. Problems with empirical investigation of FDI spillovers: A critique of previous studies

5.5.1. Previous reviews of FDI spillovers literature

Since the seventies, empirical studies on productivity spillovers from FDI abound in literature. It is therefore not surprising that prominent scholars have reviewed the evidence in order to arrive at conclusions. Notable among such reviews are Blomstrom and Kokko (1998), Gorg and Strobl (2001), Saggi (2002), Gorg and Greenaway (2004), Lipsey and Sjoholm (2005), Javorcik and Spatareanu (2005), and Smeets (2008). The primary objective of most of these reviews has been to uncover the reason for mixed results across different empirical studies of FDI spillovers. The inconsistency of results has also been the major motivation for researchers to venture into this area of investigation.

Varied and contrasting answers have been given as the reason behind the lack of consensus in results of spillovers investigation. Blomstrom and Kokko (1998) suggested that design, methodology and data of empirical studies on FDI spillovers are the main reasons for the mixed results. In direct contrast, Lipsey and Sjoholm (2005) contended that methodological procedure has no effect on the results. They noted that different specifications applied on Indonesian micro data, yielded similar results[14]. Their results reflect on the argument that the extent and direction of spillovers vary by country and not by methodology (Blomstrom and Kokko 1998; Lipsey and Sjoholm 2005; Javorcik and Spatareanu 2005). An extension of this thought is that studies on developed countries are more likely to yield similar results than those on developing countries (Saggi, 2002). Empirical reviews on FDI spillovers reveal that the most cited reason for the disparity in results across countries is that countries differ in absorptive capacities, and therefore different consequences of FDI are expected (Blomstrom and Kokko 1998; Saggi 2002; Smeets 2008).

The quest to understand the reasons for the inconclusiveness of the investigation has spurred critical insights into the patterns of the results obtained. Thus surveys on the empirical evidence have made notable observations. One of such is that vertical spillovers are more likely to exist than horizontal spillovers (Javorcik and Spatareanu, 2005). The reason for this could be that MNCs have an incentive to

[14] Takii (2001) applied value added as dependent variable, while Blomstrom and Sjoholm (1999) and Todo and Miyamoto (2002) made use of value added per employee. In addition to value added per employee, Sjoholm (1999a, 1999b) applied growth in value added per employee as dependent variables. On the other hand, Blalock and Gertler (2003, 2003) specified output as their dependent variable. All these different specifications applied on Indonesian data yielded positive and significant results.

ensure that their suppliers or customers in other industries are efficient than they do for their competitors in the same industry. This is simply because the efficiency of MNC suppliers or customers would benefit them in terms of higher quality products, lower prices for intermediate goods, effective and prompt delivery of products in the case of where MNCs are customers; and higher demand, consistent market etc in the case where they are suppliers. Of particular interest, are the observations made about the data and methodology of investigating spillovers.

The most distinct observation made about empirical studies on spillovers is that cross-section studies tend to find more significant results than panel studies (Gorg and Strobl 2001; Javorcik and Spatareanu 2005). However, evidence also posits that the results obtained in cross section studies are questionable, since they fail to control for time invariant differences in productivity which are bound to be related with foreign presence (Gorg and Strobl 2001; Gorg and Greenaway 2004).Thus the coefficients obtained from cross section regressions are likely to be biased. On the other hand, panel data techniques such as fixed and random effects techniques can control for time invariant effects (Baltagi 1995). In line with this argument, is the fact that FDI spillovers are not expected to be instantaneous; therefore studies based on data collected over time would be more appropriate for the analyses (Blomstrom and Kokko 1998; Gorg and Greenaway 2004).

Another issue regarding the data used for spillover studies is the appropriate level of aggregation of the data. It can be observed that the older studies (Caves 1974; Globerman 1979; Blomstrom (1986) made use of mostly industry level data, but over time, micro/firm level data began to feature in literature. Blomstrom and Kokko (1998) Saggi (2002), Gorg and Strobl (2001) argue that firm level studies are more appropriate for investigating spillovers. Saggi (2002) notes that plant/firm level studies do a better job in controlling for endogeneity than industry level data. But Keller (2004) contends that endogeneity could only be controlled through finding good instrumental variables.

Other issues pinpointed in surveys include the accuracy of data measurements and variable definitions. Lipsey and Sjoholm (2005) questioned the reliability of output measures such as sales and value added used widely in literature. They noted that firms have an incentive to manipulate the figures of these measures to reduce their tax liabilities. The paper also pointed out that results obtained from FDI spillover regressions are sensitive to the level of industry aggregation; the definition of the foreign

presence variable and the measure of technology[15]. In a similar vein, a meta-analysis conducted by Gorg and Strobl (2001) also revealed that the choice of foreign presence variable affect the results obtained from the spillover analysis. Thus the choice of using a measure such as share of foreign employment, as opposed to share of foreign output could affcect the results significantly (Gorg and Strobl 2001). An important methodological design issue is the fact that the difficulty in accounting for the spillover channels in the econometric model in empirical studies is a major shortcoming in the investigation (Gorg and Strobl 2005, Smeets 2008).

While acknowledging the data problems identified in literature, this study intends to bring light on other implications of the data used for modelling FDI spillovers which were rather neglected in previous studies. Specifically, the present study explores empirical studies on spillovers to reveal how the sampling procedure and consistency of data might affect the measurement of FDI spillovers (See Table A1 in Appendix 5.1 for a summary of articles reviewed). Thus unlike previous surveys, this study does not seek to find an answer to why there are mixed results in investigating FDI spillovers; but rather we try to evaluate previous studies to show how that the structure and quality of data used could have a significant effect in measuring foreign and spillovers. To my knowledge, only very few studies such as Haskel et al. (2007) had noted the importance of the sampling approach on the measure on foreign presence albeit vaguely. Thus this study intends to reveal the importance of a rather neglected aspect of FDI spillover analyses by surveying literature on the data used for the investigation; and illustrating with data on Nigerian manufacturing firms.

In carrying out the survey, this study will focus on empirical studies that use data aggregated at the firm/plant/establishment level rather than those dealing with industry/sector level data. This choice is appropriate because the present study is based on data aggregated at firm level.

[15] Lipsey and Sjoholm (2005) argued that narrow definition of industries limits the extent to which spillovers are likely to occur. They also suggested that the measure of foreign presence variable, the foreign share of an industries activity could be endogenous and nonlinear. Furthermore, the study pointed out that the definition of technology in empirical studies could be too broad or too narrow.

5.5.2. Sampling and foreign presence:

Data coverage

Data used for the empirical investigation of spillovers had been obtained from different sources. While some studies relied on commercial databases[16] to source their data, a larger portion obtain their data through surveys conducted by national or international organizations. Assuming data collected for such analysis is valid, the data coverage should also be a matter of concern. Data coverage implies the scope or extent of the population surveyed. In the case of a population of manufacturing firms, the data coverage implies the type and quality of the firms included in the sample. Thus while attempting to model FDI spillovers in manufacturing, it is important that sample reflects the distribution of manufacturing firms of the country or region in question, in order for the measure of foreign presence to be appropriate. Said differently, due to the inherent limitation of surveying the entire population of firms, it is deemed appropriate to focus on a sample of firms that are most significant in terms of their contribution of a chosen measure (employment/output/capital) of the sector. If the most significant firms are not sampled, it could lead to selection bias which could render the measure of foreign presence unreliable. Appropriate selection of data coverage is particularly important while measuring foreign presence because foreign firms are most likely to be present amongst higher levels of any chosen measure of categorization of firms. In other words, because foreign firms are more likely to exist amongst a sample of large firms, it seems reasonable to select a sample with a higher proportion of large firms. In general, the basic question to ask while considering the coverage of the data in studies based on a sample is: What category or class of firms would be covered in the sample?

As a result of the importance of selecting an appropriate sample, different studies set different standards on the type of firms they included in their sample. The selection criteria set by surveys vary according to the nature of the industry of firms in the country of study. The most common selection criterion in literature is the number of employees present in firms included in the survey sample. Evidence from literature shows that the more industrialized the country of focus is, the higher the number of employees that firms included in the survey must have. Therefore it is not surprising that articles like Peri and Urban (2006), Haskel et al. (2007), and Sembenelli and Siotis (2002), which are based in Germany, U.K., and Spain respectively, covers mostly firms with 100 or more employees. On

[16] A few studies like Keller and Yeaple (2003), Peri and Urban (2006), and Javorcik and Spatareanu (2008) mad use of Standard and Poor's Compustat database, Centro Studiluca d'Angliano and AIDA database of Bureau van Dijk, and Amadeus resp0ectively.

the other hand, articles like Sinani and Meyer (2004), and Kugler (2006) which are based in Estonia and Colombia respectively, covers firms with 10 or more employees. The reason behind this pattern could be due the fact that the size of employees in the largest firms in industrial countries is likely to outnumber that of developing or transition countries by a high margin[17]. As a consequence, in order to achieve a sample that will capture the significant firms in their respective countries, the employment size of the sample of firms in industrial countries would be higher than that of the rest. It is therefore expected that the benchmark for selecting the firms to survey in Nigeria would be low, considering the fact that small firms dominate Nigerian manufacturing industry. This also implies that the definition of a large firm in Nigeria would be different from that of a developed country like the UK. But what is more important is that the sample contains a larger portion of large firms in terms of a measure such as employment. This is based on the assumption that the labour size of a firm indicates its relevance in an industry, and as a result, firms with larger labour force are better candidates for investigating spillovers.

Representativeness

A good indication that a study had surveyed the appropriate firms is the degree of representativeness of the sample. This degree is commonly expressed in percentage of a chosen measure (employment, output, capital, sales, etc.)[18]. The importance of the representativeness of a sample cannot be overemphasized, as it is quite rare that the data is obtained from a census of all firms in the industry, thus an estimation or approximation of the sample is always the case. Even in cases where the data is obtained from a national census, legal restrictions on dissemination could lead to incompleteness of such data. It is therefore sensible to assess the credibility of an empirical work on FDI spillovers by questioning representativeness of the sample. Random sampling to obtain an approximation of a population is a valid procedure in statistical and econometric analyses but its application to FDI spillover analysis would result in particular implications. Spillovers are known to occur within sectors or regions and therefore a true measure of FDI spillovers would be achieved if the sample captures the original sectoral and regional structure of the population of firms. Specifically the measure of foreign presence would be biased if the sample is not truly representative of the population. In FDI spillover literature, sample representativeness is shown by disclosing the precise percentage of a chosen measure. This disclosure confirms the suitability of the sample for making statistical inference. This is particular

[17] Big MNCs in industrialized countries tend to be associated with higher number of employees than MNCs in developing countries.

[18] Representativeness is normally a relative measure rather than an absolute measure. Thus a sample of 100,000 firms may be less representative than a sample of 1,000 firms.

important in cases where a small or less random sample is used in computing spillover variables, as concerns over the validity of the measure becomes eminent.

Despite the importance of the representativeness of a sample in spillover analyses, it is quite surprising that about half of the empirical studies on this area of research did not disclose the representativeness of their sample (Appendix 5.1 shows an examination of empirical studies of major studies on FDI spillovers in manufacturing highlighting the extent of their disclosure). The studies that neglected the importance of disclosing the degree of representation of the sample include Aitken and Harrison (1999), Takii (2005), Dimelis (2005), Bwalya (2006), Girma and Wakelin (2007), Girma et al. (2008), and Blake et al. (2009). Fan and Hu (2007) and Blake et al. (2009) disclosed that their data was obtained from a survey of Chinese manufacturing firms, which provided a sample of 998 firms, but the sampling procedure used to generate the sample was not indicated. Chudnosky et al. (2008) indicated that results obtained from their analysis which involved a sample of 722 manufacturing firms were only valid for that sample. However they failed to indicate how the shortcomings of employing the sample would affect their measure of foreign presence. A similar group of studies are those that declared their sample representative, without specifying the degree. These include Djankov and Hoekman (2000), Ruane and Ugar (2004), and Yasar and Paul (2007). To say the least, conclusions made on the existence of FDI spillovers should therefore be treated with caution as representativeness of the sample used was not ascertained. In order words the inference on the population made with the respective sample used in these studies are bound to be questionable.

However, a notable number of related articles adequately specify the degree of representativeness of their sample. Notable in this group are the studies based on high degree of representation (i.e. above 80% of the stated measure). This category include Feinberg and Majumbar (2001), Javorcik (2004), Gorg et al. (2006), Haskel et al. (2007), Kosteas (2008), and Jordaan (2008). The high degree of representation implies that their measures of foreign presence are bound to be appropriate. Second to this group, are studies based on samples that represent about 50% to 75% of a chosen measure of the population. They include Kokko et al. (1996), Aslanoglu (2000), Kugler (2006), and Marin and Bell (2006). The last category, are the articles that can be considered as marginally representative. This category comprises about 30% or less of a chosen measure of representation. These include Barrios and Strobl (2002), Sinani and Meyer (2004), and Peri and Urban (2006).

It is important to note, that the degree of representativeness is not necessarily controlled by the researcher. In other words, in cases where the survey data is used secondarily, the researcher is unable

to increase or decrease the representativeness of the sample. What researchers are normally in control of is the choice of the observations to be excluded from the original sample. This exclusion of observations is typically based on the data requirements set by the researcher, which is dependent on what is being explained. The next section would therefore look at the criteria for exclusion of observations, and how it could affect the measurement of foreign presence.

Data quality and foreign presence

Data cleaning procedures

Empirical investigations of FDI Spillovers typically involve regressing a measure of productivity of domestic firms on a measure of foreign presence, while controlling for other determinants of productivity. To achieve this, data on measures of output, capital, labour, raw materials, and firm size, among other variables would be required. Unfortunately, in practice, obtaining quality data on these variables could pose problems to the researcher. The issue of data quality is particularly a major concern when the data collected by an entity other than the user (secondary data). As a result, the original survey sample usually undergoes a cleaning process, which involves the exclusion of observations that do not satisfy some certain criteria. This is true in literature on FDI spillovers, as exclusion of firms/observations is a common practice[19]. Due to the variety of data used in empirical studies on FDI spillovers, the criteria for exclusion vary across articles.

The most common reason across literature for deleting firms or observations is the occurrence of missing values for key variables such as capital, labour, output, and sales. Feinberg and Majumdar (2001), Javorcik (2004), Bwalya (2006), Yasar and Paul (2007a, 2007b), and Balock and Gertler (2008) excluded observations primarily because of missing values for key variables. The existence of questionable or non-positive values for variables like output and employment is another criterion for dropping observations in literature. Sembenelli and Siotis (2002, 2008), and Todo and Miyamoto (2006) amongst others dropped observations based on that judgement. In the case of like Takii (2005), and Girma and Wakelin (2007) the criteria was basically the presence of outliers in the sample.

[19] Even in cases where the data was sourced from a census, exclusion of firms is usually carried out, as some firms in the dataset might not match the selection criteria of the investigation.

The extent to which observations are excluded has an impact on the measures of foreign presence. This could be of greater concern when the firms excluded are either dominantly domestic firms or foreign firms. For example, if majority of the firms excluded from the sample are domestic firms, the foreign presence in most sectors or regions would be over estimated. This situation would be even more worrying if the domestic firms excluded are biased towards certain industries or regions. This would wrongly imply that those industries have higher foreign presence, whereas in reality, the measure is merely a consequence of poor data quality. This should be a concern especially in cases where a significant number of firms in the sample were excluded. Therefore studies were there is a huge difference between the population and the final sample could have the problem of either overestimating or underestimating foreign presence as a result of lack of symmetry in the type of firms excluded (domestic/foreign).

Data consistency

Consistency or consecutiveness of data over time is a desirable quality in empirical estimations. Panel data techniques are known to demand a number of consecutive observations. In modelling FDI spillovers, this requirement is even more important, particularly in measuring foreign presence. This is because the standard way of computing a measure of foreign presence, is to construct a ratio of foreign firms' output/employment/capital to the total in a sector or region[20]. Therefore the absence of variables or observations for output/employment/capital for a particular year could bias this measure. Specifically, the absence of observations for the variable required to compute foreign presence could be misinterpreted as a fall o rise in foreign presence, as it reduces the value of either the numerator or denominator of the fraction used in spillover computation. This is the major reason for the exclusion of firms without consecutive values across years in key variables in spillover models. Also, in an unbalance panel, where the total number of firms in each year are uneven, the measure of foreign presence for one year could differ from another just because of the inconsistency in the number of firms used in each year. Thus a panel dataset could have consistent number of firms across years, but inconsecutive observations of key variables firms across years; or inconsistent number of firms across years (unbalanced panel), but consecutive observations for key variables of firms across years. Both scenarios are likely to yield misleading results in modelling FDI spillovers.

[20] Aitken and Harrison (1999) and Sjoholm (1999) are some early firm level panel studies that implemented the measure.

Despite this importance of data consistency and consecutiveness, it is surprising that most studies do not acknowledge this while measuring spillovers. Konings (2001), Dimelis and Louri (2002), Barios and Strobl (2002), Takii (2005), Bwalya (2006) amongst others did not consider the consistency of the panel while modelling FDI spillovers. However, a small portion of related studies account for data consistency. The works of Sjoeholm (1999), Feinberg and Majumdar (2001), Sembenelli and Siotis (2002), Todo (2006), and Haskel et al. (2007) took into consideration the consistency of data. But it should be noted that these studies were basically concerned about the requirements of the panel data technique (such as GMM), rather than its impact on measures of foreign presence. There is also a lack of consensus in literature on the minimum number of consecutive year observations required for applying panel data techniques. Keller and Yeaple (2003) recommended 2 consecutive observations, while Sembenelli and Siottis (2002) recommended 4 consecutive observations. To my knowledge, the closest attempt to link the consistency of sample data to foreign presence albeit vaguely was by Haskel et al. (2007). Haskel and et al. (2007) pointed out that constructing foreign presence variable by the share of foreign firms' employment in a sector or region could pose problems in measuring foreign presence. The authors exemplified this in their study based on UK manufacturing that showed that a general decline in UK manufacturing activity in the sample (between 1973 and 1992) lead to a pseudo-increase in foreign presence. But rather than selecting consistent or connective year observations as a remedy for this, the study added more control variables intended to account for the situation into their model[21]. The present study is therefore a novel attempt to throw light on the relevance of data consistency on the measure of foreign presence which had been overlooked in previous studies.

In conclusion this chapter has provided an extensive review of literature in order to show the different directions of research available in FDI effects on both manufacturing and banks. It shows that despite the wide-ranging approaches and ingenuity towards analysing spillovers, a critical aspect which involves the measurement of the actual proxy for foreign presence has received rather little attention. This study therefore provides an important contribution by identifying these potential problems.

[21] In particular, Haskel et al. (2007) contended that adding the lag number of domestic (British) firms by region and industry; or adding the number of foreign employment and total employment separately in the model could control for data inconsistency.

Chapter 6: Data and Description

6.1 Introduction

This chapter examines the datasets employed for the analysis of FDI spillovers and foreign bank presence effects. It shows details of the data source, sampling methodology, panel structure, and the measures of foreign presence in both industries. An important section is sub-section 6.1.5.4 which compares the measure of foreign presence in manufacturing FP in the alternative measures: CBN and NMES. In the case of banking data, we provided a detailed description of the dependent variables in order to provide a rationale for their inclusion. A comparison of the two datasets is provided at the end of the chapter

6.1.1 Data on Nigerian manufacturing firms

Data for the investigation of FDI spillovers in Nigerian manufacturing industry was sourced from the Nigerian Manufacturing Enterprise Survey (NMES). The NMES survey was conducted by United Nations Industrial Development Organisation (UNIDO) and Centre for the Study of African Economies (CSAE) of the University of Oxford. As part of the African Manufacturing Surveys (AMES) carried out by UNIDO-CSAE in the 90s, the survey followed the typical structure implemented in similar surveys in other African countries.

The NMES was essentially aimed at pinpointing the reasons for decades of poor performance in the Nigerian economy in order to devise policies to tackle them. In line with African Manufacturing Surveys (AMES), manufacturing firms in Nigeria were the focus of the survey. The focus on manufacturing is due to the notion that the development of the sector is the key to rapid economic growth as exemplified by the Asian Tigers. The main strength of the NMES survey lies in the fact that it based on firm level data which contrasts to the dominant use of aggregate data in studies on African firms.

6.1.2. NMES as an extension of World Bank Regional Program on Enterprise development (RPED)

Initially, the World Bank RPED conducted surveys on the African manufacturing firms in the early 90s. This typically involved interviewing about 200 firms in various African countries. The basic information derived from these firms was data on sales, output, capital, employment, etc. These data have been extensively studied by researchers in organisations such as World Bank, UNIDO and CSAE. Among other uses of the data, the data obtained from these surveys have been used to estimate production functions. This makes the data a good candidate for modelling FDI spillovers.

The major motivation for UNIDO-CSAE to engage in conducting subsequent surveys (AMES) was the short time span of the RPED surveys. Thus the AMES of UNIDO-CSAE basically follows the RPED surveys but essentially extends the time span. Both NMES survey and RPED survey on Nigeria applied stratified random sampling. This involved classifying the population of firms into groups/strata, and drawing random samples from each stratum according to a specified criterion (NMES, 2001). The reason for this choice is due to the homogeneity of firms within strata and heterogeneity of firms between strata in the case of Nigeria. As a result of this feature, stratified random sampling became the appropriate approach because it minimizes variability within strata and maximizes variability between strata. Another feature accounted for in both surveys is the fact that homogenous small firms dominate the Nigerian manufacturing terrain but larger firms make up a larger proportion of the employment. Thus in order to fulfill the data requirements of modelling a production function, the final sample in both surveys contained a larger proportion of large firms than the actual population (NMES report, Wave 1).

The sector and region divisions in both surveys were quite similar. Both NMES and RPED survey on Nigeria identified nine sub-sectors, but there were slight differences in the type of sectors identified and their aggregation. The regional division of the two surveys were quite similar, as the Southwest region, eastern region, and northern region were identified. A distinct feature in both surveys is the dominance of the southwest region (Lagos and Ibadan). In general, the sample size of both NMES survey and the RPED survey on Nigeria took account of the size, sector and region distribution of the population of Nigerian firms. Thus this implies that the samples were representatives of the population of the country's manufacturing firms. However, the sample sizes of the surveys differ slightly. While the RPED survey was based on 232 firms, the NMES survey (Wave 1) was based on 175 firms.

6.1.3 Sampling procedure

As pointed out in the NMES report, the sampling procedure adopted follows that of the RPED survey. This section throws light into the sampling method used by the RPED survey due to the absence of sampling details of the NMES survey in its report.

The first stage in selecting the sample was the identification of the population of manufacturing firms in Nigeria. Nigeria is a country with country numerous informal and unregistered firms. But these firms are usually small/micro in nature, and therefore of negligible impact on the manufacturing sector. Thus to identify the population of manufacturing firms, Nigerian government institutions relied on source data on registered firms. The "National Directory of Establishments" published by the Federal Office of Statistics (FOS)[22] was the source of data of the population of manufacturing firms for the RPED survey.

This next stage was the elimination of firms which could not be adequately classified as manufacturing firms, and firms that do no meet the minimum number of employees required. The rest of the firms which met the selection criteria were subjected to stratified sampling. With knowledge of the uneven geographical and sectoral distribution across Nigerian manufacturing sector, the listings were grouped into appropriate region, size and sector clusters. In line with the requirements of stratified sampling procedure, random firm were drawn from each cluster. The sampling method allowed the largest firms in the distribution a higher probability of being selected than the rest of the firms.

[22] The Federal Office of Statistics merged with the National Data bank to form the National Bureau of Statistics (NBS) between 2005 and 2009.

6.1.4 The NMES sample

Table 6.1 Basic features of NMES sample

Year	Frequencies
1998	200
1999	203
2000	204
2001	122
2002	122
2003	122

Year observations per firm	Total number of firms
1	0
2	1
3	112
4	1
5	2
6	103
Total	219

Table 6.1 shows the basic features of the NMES sample. The table shows a clear disparity in the frequency of year observations between the years 1998-1999 (Wave 1) and 2001-2003 (Wave 2), as the firm observations fell from 204 in 2000, to 122 in 2001.Thus about 40% of firm observations were lost between Wave 1 and Wave 2. Table 6.1 also shows differences in year observations of firms in the sample. Firms with 3 year observations have the highest frequency, followed by firms with 6 year observations. Firms with 2 year, 4 year, and 5 year observations constitute less than 2% of the sample. All the firms in the sample have more than 1 year observation.

Table 6.2 Total firms and employment by size class (last provided employment size)

Size class (employees)	Total firms	Total employment
Micro firms (<=5)	28	95
Small firms (btw 5and 20)	51	596
Medium firms (btw 20 and 75)	53	2,067
Large firms (btw 75 and 500)	45	8,067
Macro firms (above 500)	21	47,523
No size class	21	-
Total	219	58,348

Figure 6.1 Histogram of employment variable

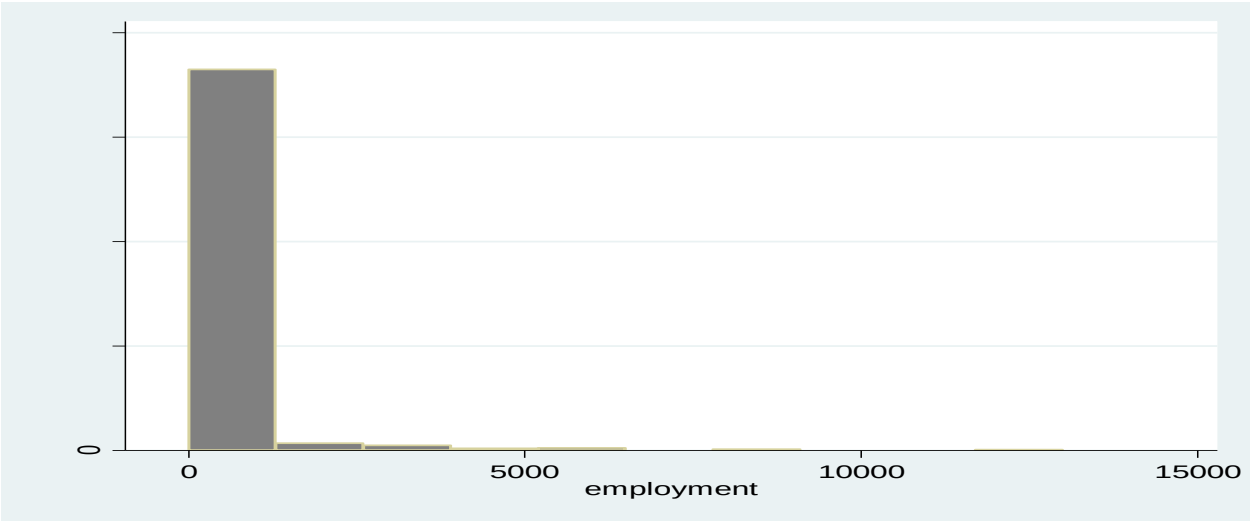


Table 6.2 shows the total firms and employment according to size class, while Figures 6.1 shows the histogram of employment variable. Figure 6.1 show that most firms in the sample have less than 2,500 employees.

Table 6.3 Total firms and employment by sector (as at 2003)

Sector	Total firms	Total employment
Food	20	13,582
Textile	35	25,161
Garment	42	445
Wood	9	395
Paper	23	1,333
Chemical	22	9,205
Metal	37	3,752
Machines	11	3,531
Furniture	14	944
No sector	6	-
Total	219	58,348

Figure 6.2a Chart of total firms by sector

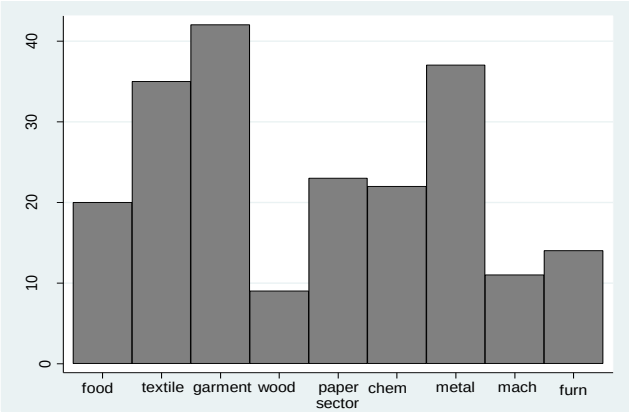


Figure 6.2b Chart of total employment by sector

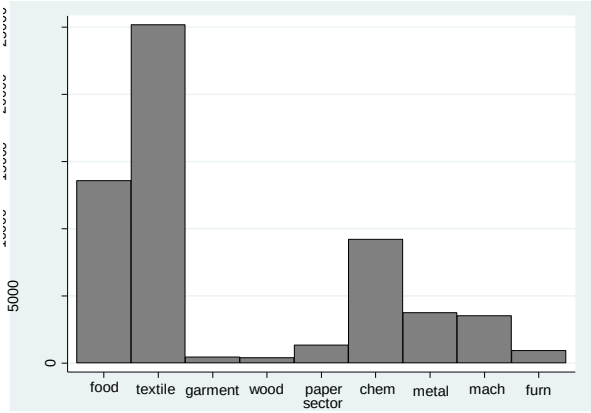


Table 6.3 shows the total firms and employment according to sector, while Figures 6.2 shows their respective bar chart representations. Table 6.3 and Figures 6.3 show the Garment sector has the highest frequency in the sample while Textile sector dominate total employment. The sample of firms from the Metal sector and Textile sector are also relatively high, but the total employment in Textile sector is clearly higher than every other sector. Wood sector has the both lowest number of firms and the lowest share of total employment in the sample.

Table 6.4 Total firms and employment by region (last provided employment size)

Region	Total firms	Total employment
west	107	21,481
east	31	904
north	48	7,551
No region	33	28,412
Total	219	58,348

Figure 6.3a Chart of total firms by region

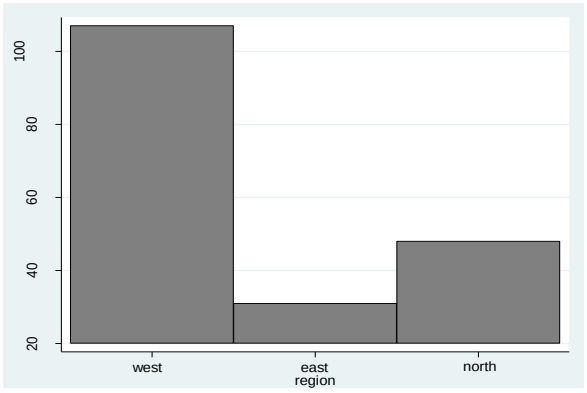


Figure 6.3b Chart of total employment by region

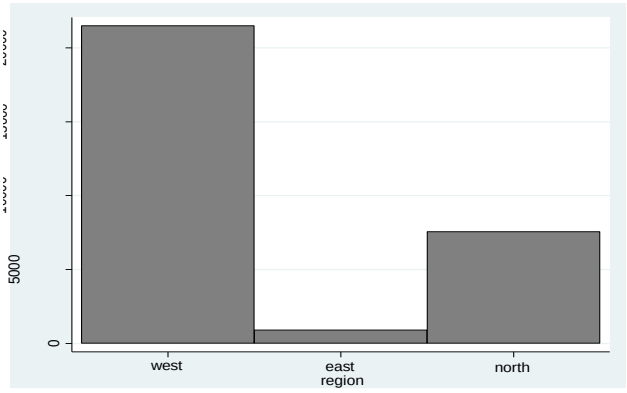


Table 6.4 shows the total firms and employment according to sector, while Figures 6.3 shows their respective bar chart representations. The West region clearly dominates the total number of firms and the total employment in the sample. According to the sample, the number of firms and total employment in the West region is higher than the summation of that of the east and north.

6.1.5 Measuring foreign presence

Foreign presence across sub-sectors in Nigerian manufacturing Sector

As noted earlier in Chapter 5, the sample used for measuring presence is of major concern in modeling spillovers. Foreign presence can only be captured if the foreign presence across the sectors, regions, and years capture the true distribution of the population of firms. In other words, the foreign presence distribution of the survey sample of firms should match with the aggregated FDI distribution data of the country. In this section, we take a close look at the two alternative datasets: NMES and CBN, in order to tease out their similarities and differences. We start by looking at the Cumulative Foreign Private Investment (FPI) by industry in the Manufacturing and Processing sector, published by the CBN Statistical Bulletin 2006. The data contains total foreign private investment in 28 industries (sub-sectors) in the manufacturing sector between 1970 and 2005, compiled from responses obtained from the CBN annual survey of Nigerian companies with imported capital.

To enable comparison with the NMES data, the present study selected 9 sub-sectors out of the 28 available sub sectors in the bulletin. The most important task performed while using the data from CBN is the matching of the industry classification of CBN with that of NMES. Matching the industry classification is highly crucial because while CBN dataset employed the 3-digit level of classification, NMES made use of 4-digit level. Thus random matching of the industries could lead to misleading measures of foreign presence. A number of steps were followed to ensure accurate matching of the two datasets (See Appendix 6.1, Table A1).

First was to identify industrial classification of each firm in the original NMES dataset. The STATA syntax provided from the University of Oxford contained the syntax used to classify the industry or sector of each firm. It provided a group classification of firms according to the International Standard Industrial Classification (ISIC) codes. Thus firms within a range of ISIC codes (numerical value) were classified in members of the same sector. The NMES dataset identified nine separate sectors, with each sector

consisting of firms with ISIC codes falling within a stated unbounded interval. On the other hand, the CBN dataset identified thirty two sectors/industries. But in this case, the names of the industries were provided while their corresponding ISIC codes were absent. Thus it becomes pertinent to match the two sector classification carefully in order to avoid misrepresentation of foreign presence.

The second step therefore involves the actual matching of the two datasets. To achieve this, we use the "Overview of ISIC code system" published by Economic and Social Data Service (ESDS) to identify the names of each 4-digit industry classification provided by the NMES dataset. Pages 4 to 8 of the publication provide a table that aids the linkage of 4-digit industries with their corresponding 3-digit classification. With this information, we could figure out the 3 digit equivalent of the ISIC code identifiers provided in the NMES dataset. Thus for each firm with ISIC 4-digit code identifiers in the sample, a corresponding 3-digit ISIC code or classification was provided. As a consequence, for each sector classification identified by NMES, a corresponding 3-digit level classification was identified. It is important to note that in most cases, the NMES classification of a sector contained more than one 3 digit-level industry classification. For example the NMES classification for "food" sector contained the 3-digit level classification for both "food products" and "beverages" industries. A direct implication of this is that matching sectors identified in the NMES dataset with that of 3-digit level classification employed by CBN would entail the summation of the values of the later. In this study, this was the case for most of the sectors.

Table 6.5: Distribution of FP (cumulative FPI in nominal values of local currency) across sectors - CBN

sector	1998	1999	2000	2001	2002	2003
Food	9,462,640	10,668,817	15,250,266	12,094,355	16,675,804	21,678,545
Textile	6,028,772	6,267,102	7,428,380	6,474,830	7,636,187	9,604,230
Garment	44,691	44,691	0	0	0	0
Wood	210,167	210,167	210,167	216,472	869,542	1,130,405
Paper	730,284	804,298	1,681,257	888,740	1,777,315	2,297,151
Chemical	5,014,288	5,201,151	5,270,552	5,389,652	5,459,054	5,459,053
Metal	2,280,075	2,374,454	3,304,834	2,466,126	3,396,506	3,667,931
Machines	2,060,650	2,626,566	3,269,664	2,671,905	3,315,003	3,799,437
Furniture	0	0	0	0	0	0

Source: CBN statistical Bulletin 2006

Figure 6.4a FP across sectors (CBN) – 1998- 2003

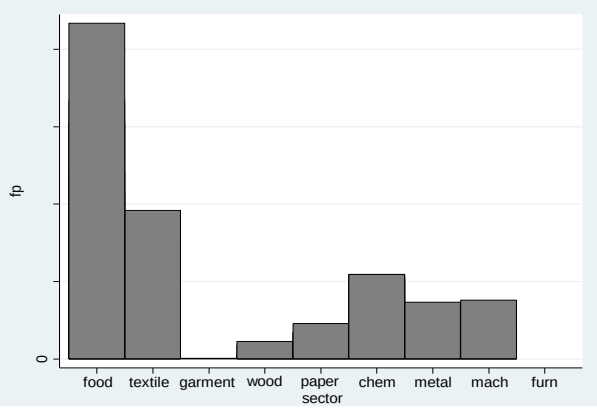
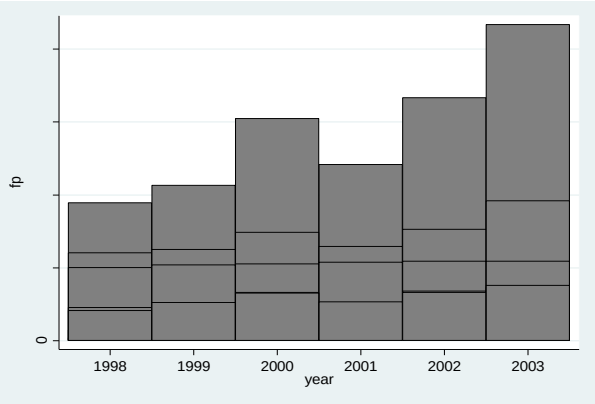


Figure 6.4b FP across years (CBN)



Each value on Table 6.5 represents the corresponding monetary value share of the total manufacturing FPI in a sub-sector and year. Figure 6.4a shows that the Food sector clearly has the highest FPI, surpassing the Textile sector which has the second highest FPI by a wide margin. Figure 6.4b shows that apart from a decline in FPI between 2000 and 2001, FPI in Nigeria followed an upward trend between 1998 and 2003.

Foreign presence across sub-sectors in NMES sample

Having confirmed earlier that the NMES sample is a representative of the Nigerian manufacturing sector in terms of its sectors and regions, in this section, we investigate whether this is true of the foreign presence (FP) distribution across sectors. But how is foreign presence measured across sectors in a sample of manufacturing firms? An approach commonly used in empirical literature on this area of investigation is to construct the foreign share of a chosen measure in each sector. The variable obtained will capture intra-sectoral or horizontal spillovers from FDI. We follow a common measure employed in literature to measure foreign presence as the share of sectors employment in total employment in the sector[23]. Using that variable constructed, we take the means across sectors and years to show how foreign presence varies across sectors and years. Table 6.6 follows the structure of Table 6.5 to show variation in foreign presence across sectors and years in the sample. The numbers in parenthesis indicate the number of observations. The distribution of FP variable sourced from CBN (Figure 6.4a) is

[23] Notable papers that used this measure include Aitken and Harrison (1999), Aslanoglu (2000), Takii (2005), and Peri and Urban (2006).

quite different from that of NMES (Figure 6.5a). While Figure 6.4a shows that Food sector has the highest FP, Figure 6.5a shows that Wood sector has the highest. Similarly, while Figure 6.4a shows tha FP in the Chemical sector is higher than that of the Metal sector, the opposite is the case in Figure 6.5a. In the same vein, the upward trend observable in Figure 6.4b is in contrast to the slight downward trend shown in Figure 6.5b. It is important to note that the downward trend observed in Figure 6.5b is most likely linked to the dramatic loss of number of observations in the sample between 2000 and 2001[24].

It does not seem reasonable to attribute this loss of observations to exit (closure) of firms in the survey as the Index of Industrial Production, published by The CBN Statistical bulletin, grew within the period in question. This suggests that the loss of observations could be as a result of the shortcomings of the survey, among other reasons. This scenario is therefore a clear case of how data inconsistency or unevenness affects the measure of foreign presence in a sample, as the shortcomings of the NMES data resulted in a misleading representation of the actual direction of foreign presence in Nigerian manufacturing.

[24] The data for the years 2001-2003 (Wave 2) was collected 3 years after the data for the years 1998-2000 (Wave 1). Unfortunately, there was no specified reason for the huge loss of observations in the between the two waves.

Table 6.6 Distribution of FP in NMES sample across sectors and years

Sector	1998	1999	2000	2001	2002	2003	Total sector observations
Food	0.9863	0.9559	0.6188	0.4315	0.4528	0.5840	
	(19)	(19)	(19)	(15)	(15)	(15)	(102)
Textile	0.8748	0.4297	0.4239	0.0747	0.0849	0.0931	
	(32)	(33)	(33)	(11)	(11)	(11)	(131)
Garment	0	0	0	0	0	0	
	(40)	(40)	(40)	(27)	(27)	(27)	(201)
Wood	1	1	0.9044	0.8309	0.8440	0.9044	
	(6)	(6)	(7)	(5)	(5)	(5)	(34)
Paper	0.3063	.3805	0.3704	0.2603	0.2592	0.2833	
	(20)	(21)	(21)	(12)	(12)	(12)	(98)
Chemical	0.5872	0.7425	0.2710	0.2234	0.1991	0.1954	
	(20)	(20)	(20)	(11)	(11)	(11)	(93)
Metal	0.8029	0.7880	0.7798	0.41326	0.4090	0.5444	0.5444
	(35)	(35)	(35)	(18)	(18)	(18)	(159)
Machines	0.7407	0.7657	0.5328	0.5905	0.6042	0.6059	
	(9)	(9)	(9)	(7)	(7)	(7)	(48)
Furniture	0	0	0	0	0	0	
	(11)	(12)	(12)	(11)	(11)	(11)	(68)
No category	0	0	0	0	0	0	
	(8)	(8)	(8)	(5)	(5)	(5)	(39)
Total year observations	(200)	(203)	(204)	(122)	(122)	(122)	(973)

Figure 6.5a FP across sectors (NMES)

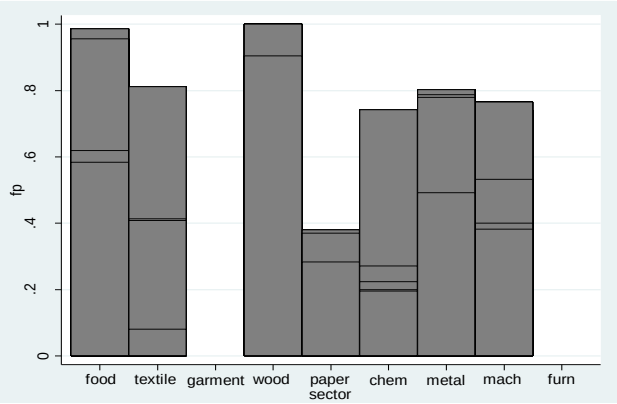


Figure 6.5b FP across years (NMES)

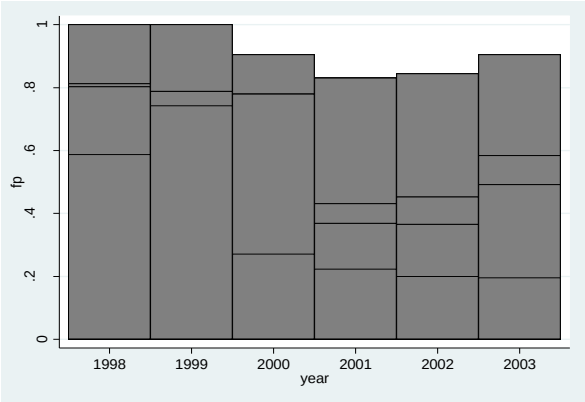


Table 6.6 show the ratio of foreign employment in each sector and each year in the sample. The numbers in parenthesis represents the number of firms used for the computation of the FP measure. Sectors with a value of 1 imply that 100% of the firms in the corresponding year are foreign, while sectors with a value of 0 imply that no foreign firms exist in the sector in the particular year. Figures 6.5a and 6.5b show the bar chart representation of the Table 6.6 across sectors and years respectively.

Comparing Figure 6.5a to Figure 6.4a shows differences in the distribution of FP across sectors in the two measures. While Figure 6.4a show that the Food sector is clearly dominates in FP, the Wood sector has the highest FP in Figure 6.5a, where years 1998 and 1999 had 100% foreign firms. This is contrary to Figure 6.4a, where the Wood sector has the third least foreign presence. The dominance of this Wood sector in the sample is likely to be linked to the fact that its computation is based on relatively few firms (5 to 7) as indicated in Table 6.6. Thus this makes the computation of FP sensitive to the shortcomings of the sample in representing the actual foreign distribution in the sector. Ignoring the Wood sector, another difference is that the difference in FP between the Food and Textile sectors in Figure 6.4a is larger than that of Figure 6.5a. In terms of order of magnitude of FP, while Figure 6.4a shows that the Chemical sector is higher than the metal sector, and the Machine sector is slightly higher than the Metal sector, the reverse is the case in Figures 6.5a. However, despite these differences, the major similarity is the fact that two sectors, Garment and Furniture sectors, have limited or no FP in the two alternative measures.

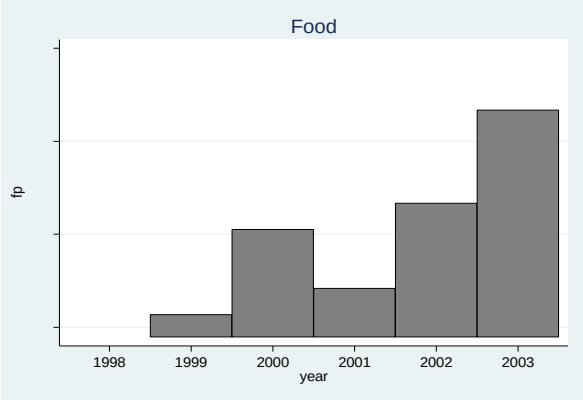
The upward trend in FP across years shown in Figure 6.4b is in direct contrast to the downward trend across years show in Figure 6.5b.

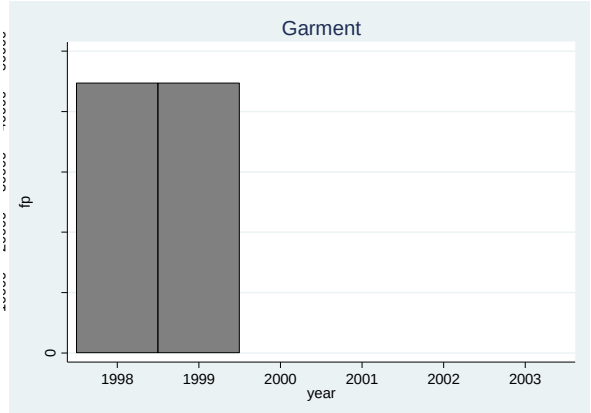
Comparing FP in each sector in the two alternative measures

Each sector in Figure 6.6 show remarkable differences in the two alternative measures of FP. A common feature in each sector is that while the CBN measure shows an upward trend in FP across the years, the NMES measure shows a clear downward trend. The downward trend observed in the NMES measure is most likely linked to the loss of 40% of observations between 2000 and 2001. The substantial reduction in sample size between 2000 and 2001 is reflected in each sector in Figure 6.6 as an abrupt fall in FP, suggesting that the loss of observations affected mostly foreign firms in the sample. Figure 6.6 shows that the CBN measure also witnessed a fall in FP between 2000 and 2001 in most sectors, but unlike the NMES measure, a rise in FP in 2002 followed the fall. Also, the transition of Nigeria to democratic rule in 1999 saw an increase in FDI between 1999 and 2000, reflected in the increase in FP in each sector in the CBN measure. This is in contrast to the fall in FP shown in the NMES measure in most sectors. Thus the CBN measure, due to its broader coverage of the population of manufacturing firms in Nigeria, reflects the actual trend of FP in each sector across the years focused in this study. It also reflects the widely known realities of foreign presence in the country, especially in terms of political and economic events that affected FP in the period studied. On the contrary, the NMES sample seems to be sensitive to the problems or errors in sampling encountered in data collection.

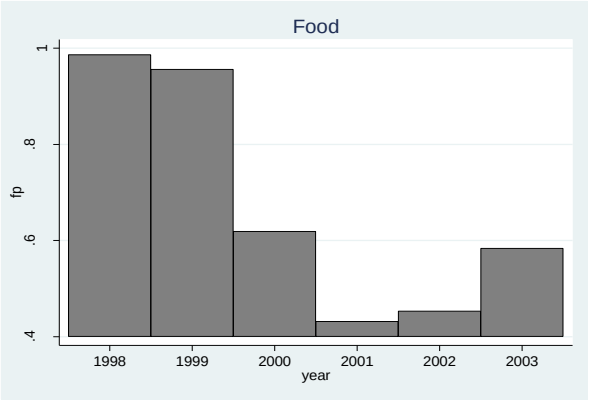
Figure 6.6 FP across sectors – CBN and NMES measures

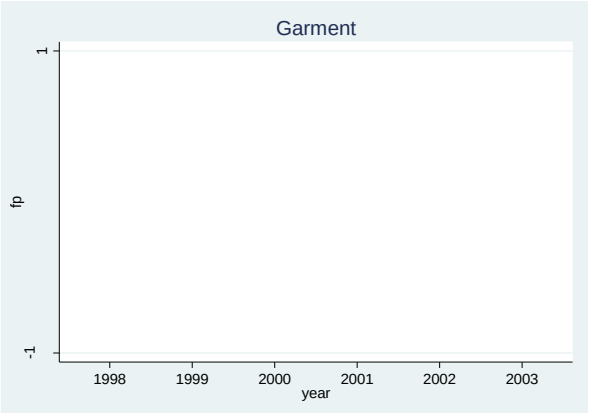
CBN measure

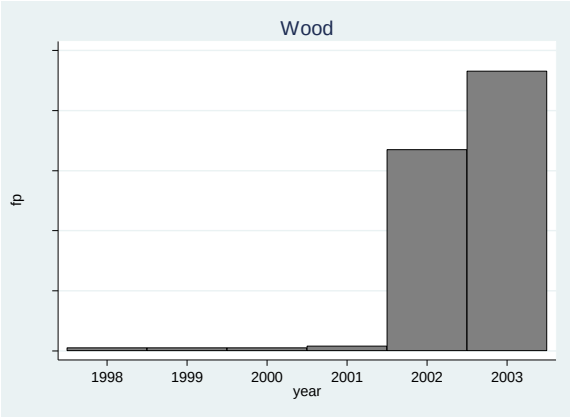




NMES measure



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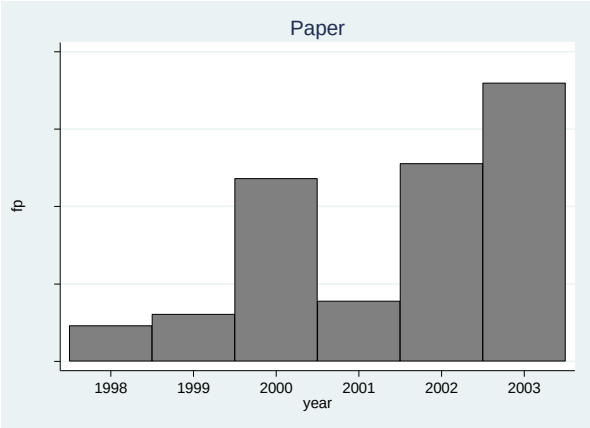
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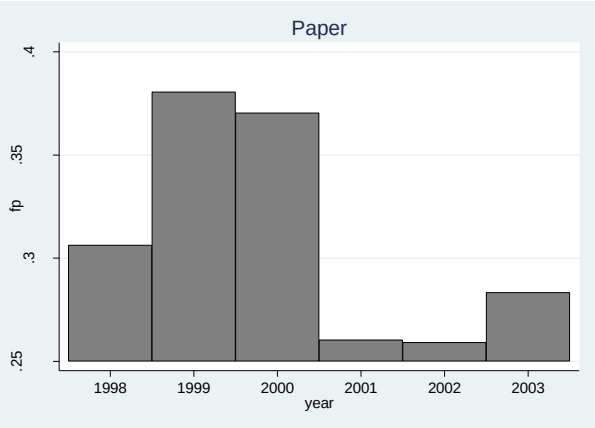
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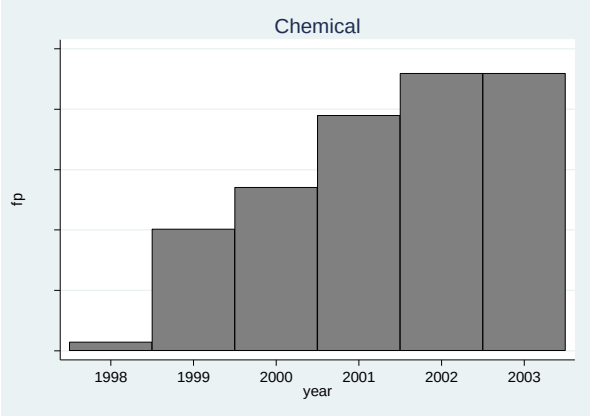
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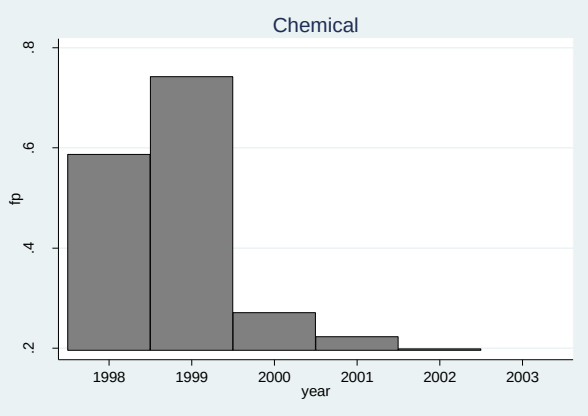
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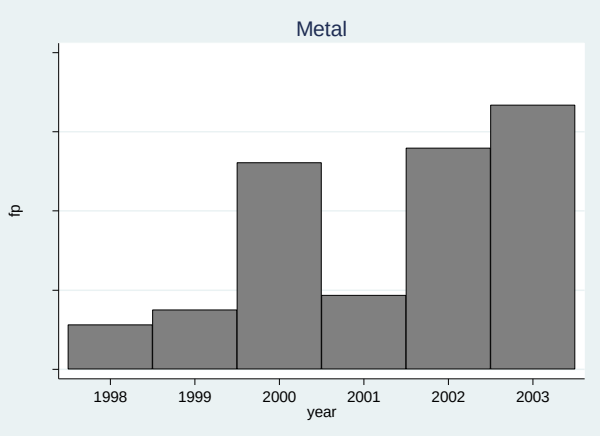
Metal
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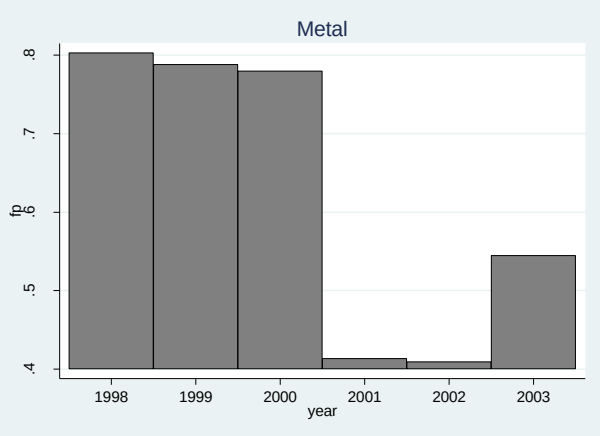
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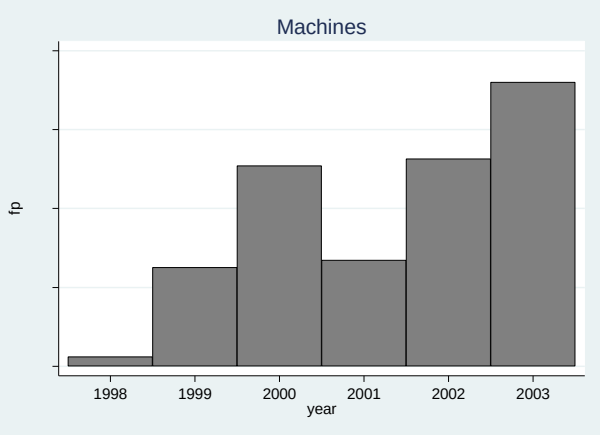
Machines
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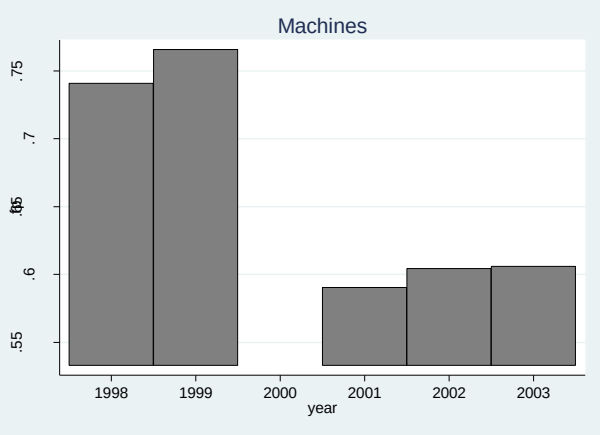
Machines
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Furniture
fp
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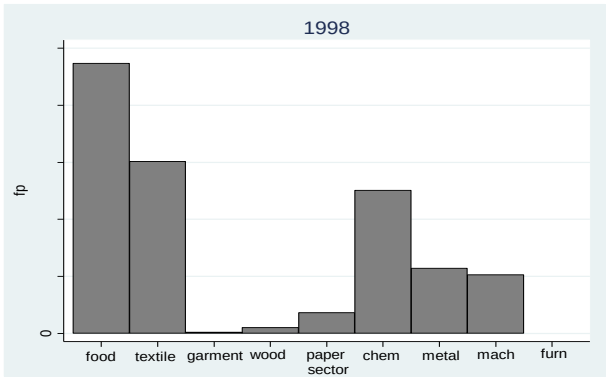
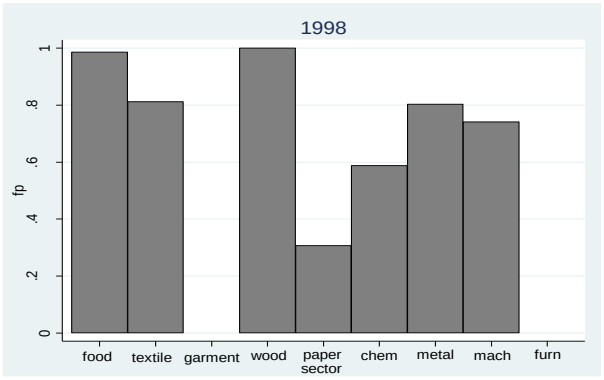
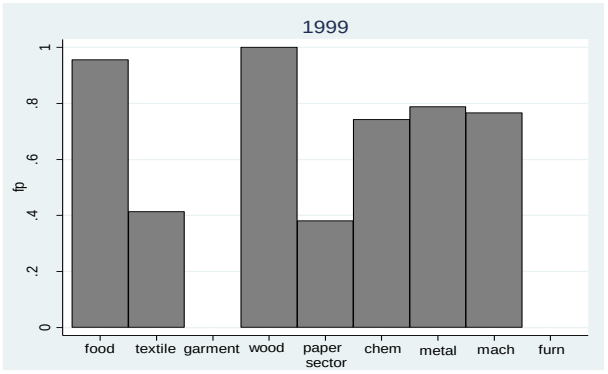
Comparing FP in each year in the two alternative measures

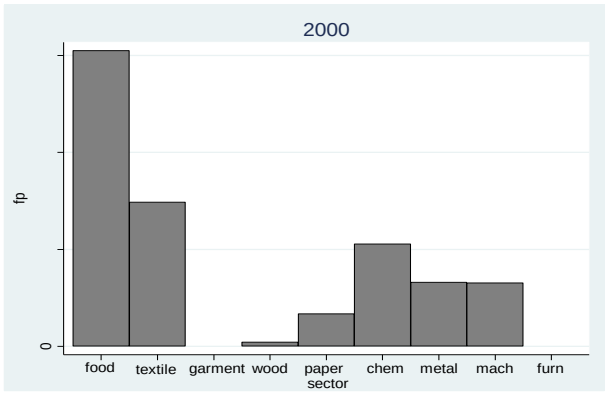
Figure 6.7 FP across years – CBN and NMES measures

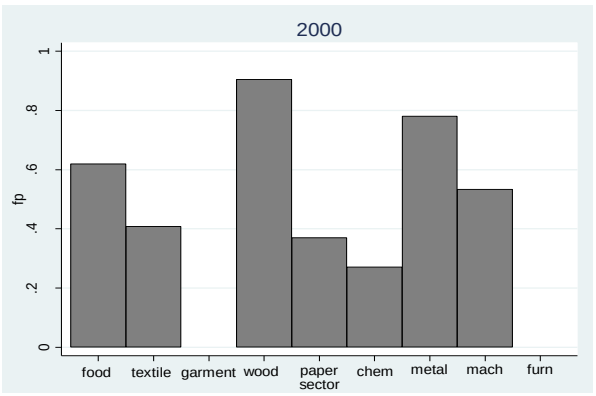
CBN measure NMES measure

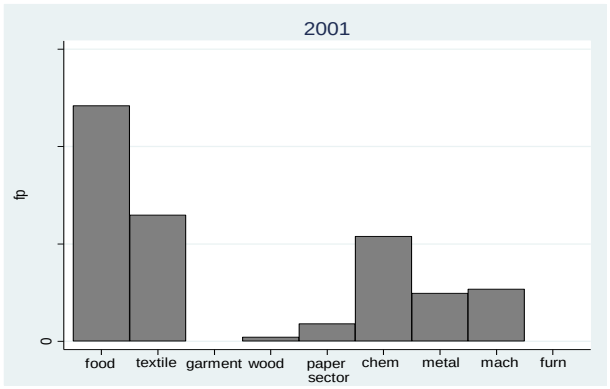


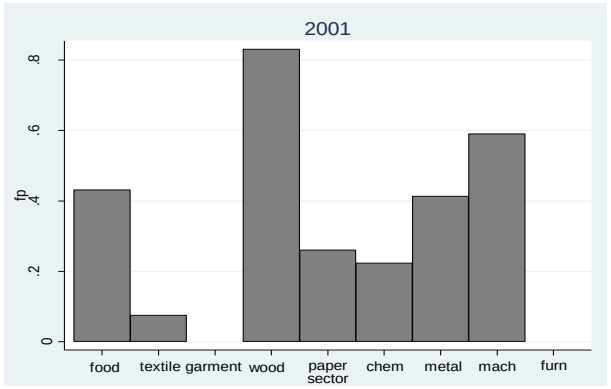


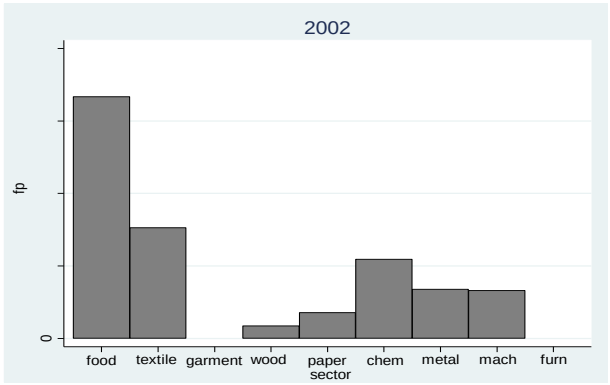


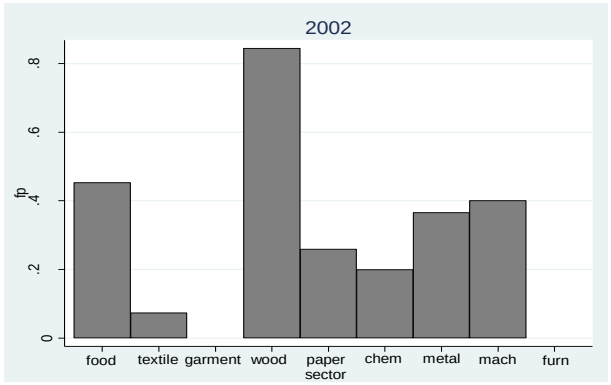


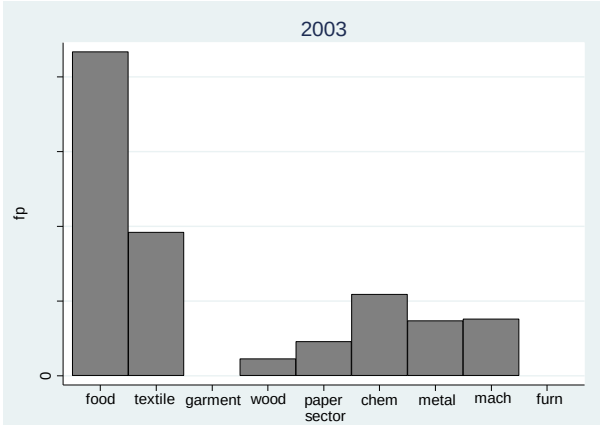


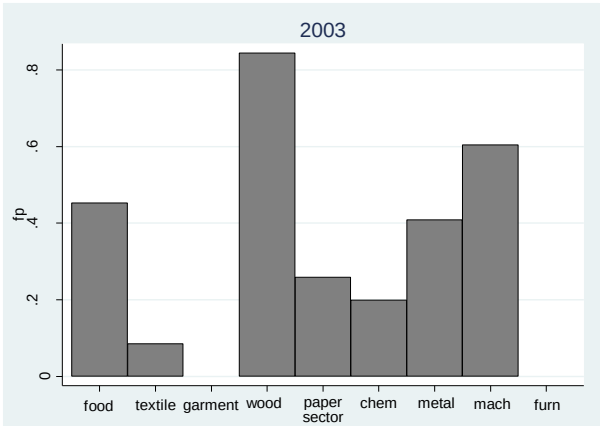












The distributions of FP across sectors in each year also show dissimilarities between the two alternative measures. Figure 6.7 shows that the CBN seemed to follow the same distribution of FP across sectors in each year, in exception of the sectors Metal and Machines. This is not true of the NMES measure, as the distribution changed substantially between 2000 and 2001. In general, significant changes across years are show in sectors Paper, Chemical, Metal, and Machines in the NMES measure. As indicated earlier, these variations are most likely linked to problems encountered during data collection. Thus the relative

stability of the distribution of FP across sectors in each year shown in the CBN measure suggests that it represents the actual distribution of FP in the population; thus it is preferable to the NMES measure.

6.2. Data on Nigerian banks

6.2.1. Data Source

Data for modeling the impact of foreign presence on the performance of Nigerian banks was sourced from two main sources: BankScope and Nigeria Deposit Insurance Corporation (NDIC). BankScope is a product of Bureau Van Dijk, which contains extensive information on banks across the globe. Classens et al. (2001), Shen et al. (2009), Uiboupin (2005), and Hermes and Lensink (2004) use BankScope as the major data source in their respective empirical work. Information available includes balance sheet information, income statement, ratios, ownership, and brief history of individual banks. However, ownership information on Nigerian banks which is crucial in this study was not available in BankScope. An alternative source of foreign ownership information was the annual reports of NDIC. Along with the Central of Nigeria (CBN), NDIC is a regulatory institution with the mandate to supervise banking operations in Nigeria among its core roles of insuring bank deposits and liquidating failed banks. Thus the Corporation collects data on insured banks in the country, and publishes part of this data on its annual reports. The key data obtained from NDIC was the percentage of equity owned by foreigners, which was used to compute both the micro and macro level measures of foreign presence.

Macroeconomic variables used in the model were sourced from World Bank World Development Indicators (WDI). WDI dataset contains wide ranging yearly macro economic data on Nigeria. This study made use of real macroeconomic values to account for inflation which is quite significant in Nigeria.

6.2.2. Coverage of data

Data consists of information on 60 Nigerian banks between 1992 and 2009; available on BankScope was used in this study (See Appendix 6.1 Table A4 for list of banks used for this study). Thus the choice of banks included in the sample was based on their availability on BankScope. Yearly data mainly comprising of balance sheet and income statement information of individual banks provided 356 total observations. However, the representation of the sample to the total bank population varied considerably across years. Table 6.1 shows how the number of banks sampled and their assets relate to the population of banks in the industry.

Table 6.7 Coverage of Sample: sample proportion of number of banks and assets each year

Year	Number of banks in sample	Number of banks in the population	% of banks in sample to population	Total assets of banks in sample	Total assets of bank population	% of total assets of banks in the sample to total assets in bank population
1992	1	120	0.8	0.5	231.6	0.2
1993	2	120	1.7	1.3	333.0	0.4
1994	3	115	2.6	5.0	350.6	1.4
1995	6	115	5.2	15.0	482.6	3.1
1996	10	115	8.7	30.7	591.2	5.2
1997	19	115	16.5	64.8	739.4	8.8
1998	22	89	24.7	107.5	789.2	13.6
1999	23	85	27.1	202.2	1325.8	15.3
2000	27	89	30.3	341.7	1896.1	18.0
2001	28	90	31.1	472.5	2449.1	19.3
2002	37	90	41.1	1046.2	2980.5	35.1
2003	38	89	42.7	2106.6	3365.2	62.6
2004	33	89	37.1	2385.8	4047.0	59.0
2005	24	25	96.0	3149.2	5463.1	57.6
2006	21	25	84.0	5574.4	8054.8	69.2
2007	22	24	91.7	9390.3	13011.6	72.2
2008	21	24	87.5	16537.1	17522.9	94.4
2009	19	24	79.2	14475.3	19261.0	75.2

Source: BankScope; NDIC

Table 6.7 shows the proportion of the banks and total assets covered by the sample. This comparison was possible due to the availability of population data in annual reports on NDIC. It is apparent from Table 6.7 that data for the nineties were largely unrepresentative of the population. It could also be noticed that the proportion of population sampled is underestimated by the number of banks measure, and underestimated by the total assets of bank measure. This raises the question of whether the banks not included in the sample are relatively big banks. In general, the more recent years (2005-2009) had a high proportion of banks and total assets in population available in the sample.

Despite the fact that the data was obtained secondarily, knowledge of the events that occurred in the industry could give some insight into the reason for differences in banks available in BankScope across years. Nigerian banking industry experienced a huge shock in 2004, where the central bank increased

the minimum capital requirement for operation by 1250%. This lead to the exit of 14 banks, while 75 banks engaged in mergers and acquisitions, which left only 25 banks in the and merging and acquisition of 75 banks, which left only 25 banks in the industry. This dramatic decline from 89 to 25 banks in the industry evident in Table 6.7 has constituted problems in data collection and organization for both national and international bodies. Data on the pre 2005 banks are rather scarce, as attention is focused on the post 2005 banks. Thus recent studies on Nigerian banking industry are faced with the challenge of sourcing data on individual banks over a long period of time.

BankScope, as a private organization which collects bank information in over 29,000 banks worldwide, provides mostly recent information on exiting banks, while information on non-existing 'old' banks are phased out as a result of frequent updating. This frequent updating also affects the time frame of the existing post 2005 banks, as the maximum number of years reported for a single bank at a particular point in time is 8 years. Nonetheless, the database was able to provide information on some of the pre 2005 banks which constitute the 25 banks that emerged from the extensive mergers and acquisition (M&A) activity. This implies that information on banks that exited the industry were not provided by BankScope, and therefore not included in the analysis in this study. Part of the reasons for the rather small representation of the banks in the 90s as shown in Table 6.7, is therefore due to the 2005 M&A event which made pre 2005 less important; and the frequent updating of the database which removes 'older' year observations of every bank from the information reported at a particular time. In general, this investigation is limited to banks that survived in the industry, as it does not account for banks that exited due to reasons such as insolvency or bankruptcy.

Another reason for the small representation of banks in the sample is due to the inherent problem of data availability which affects all research based on Nigeria. BankScope data are largely based on annual reports of individual banks collected according to a specified accounting standard. Perceived problems experienced by BankScope in collecting data on Nigerian banks could therefore be in the form of failure to provide annual reports by some individual banks, non-disclosure of the major information required, or simply non-availability of the data required. Banks in Nigeria are not mandated by law to provide data to BankScope, therefore they may not have the adequate incentive to provide such information. However, they are statutorily required to fully disclose to regulatory to bank regulators, but disclosure to the general public is kept at a minimum level (Lyade, 2006).

Attempts to complement the data available on BankScope with official reports from regulatory bodies like the CBN and NDIC yielded limited success. Complementary data on ownership and share capital

were the only data sourced from a Nigerian regulatory body: NDIC. This is due to the scarcity of bank official bank level data from these institutions. Detailed bank level data are kept confidential from the public by CBN and NDIC (Alashi, 2010). However, information provided by the publications of CBN and NDIC gave useful insight on modeling options, especially in construction of dummies that indicate booms, crises, M&A periods.

In general the coverage of the data used for this study was mainly driven by their availability on BankScope. Data from NDIC were used as complements to the variables obtained on the banks available on Bankscope. Thus though data from NDIC annual reports contained information on the population of banks in Nigeria, only information on the 60 banks which could be reconciled with the data available BankScope was used for this study.

Basic features of sample

Table 6.8: Frequencies

Year	Frequency	Percent	Cumulative Percent
1992	1	0.3	0.3
1993	2	0.6	0.8
1994	3	0.8	1.7
1995	6	1.7	3.4
1996	10	2.8	6.2
1997	19	5.3	11.5
1998	22	6.2	17.7
1999	23	6.5	24.2
2000	27	7.6	31.7
2001	28	7.9	39.6
2002	37	10.4	50.0
2003	38	10.7	60.7
2004	33	9.3	69.9
2005	24	6.7	76.7
2006	21	5.9	82.6
2007	22	6.2	88.8
2008	21	5.9	94.7
2009	19	5.3	100.0
Total	356	100	

Table 6.8 reveals the nature of the unbalanced panel data of banks used in this study. It shows that majority of the observations fall between 1997 and 2009, with 2003 and 2002 having the highest and the second highest number of observations respectively. There are a total of 60 banks, with 41% of the banks having between 5 and 8 year observations, and 21% of them having 8 year observations. Thus 88% of the total number of observations consists of banks with 5 to 8 year observations. Table 6.8 also shows that the most observations (70%) in the sample correspond to the years prior to the 2005 M &A activity.

6.2.3. Description of performance/dependent variables

Measures of performance

In general, evaluating the performance of banks has been focused on specific aspects. These include: earnings, efficiency, risk-taking, and leverage (ECB, 2010).However empirical literature on bank performance show that the choice of accounting measures for these aspects differ according to the nature of investigation carried out. Thus despite the abundance of different accounting measures of bank performance, the empirical model employed depend on the sought of enquiry being made. Literature on the impact of foreign entry/presence on bank performance focuses on measures of profitability, income, and costs. Thus the following widely used[25] accounting identity derived from a bank's Income Statement is employed in this study:

Before Tax Profits/Total assets = (Net Interest Margin + Non-interest income – Overheads – Loan Loss provisioning)/Total assets (1)

Table 6.9 Descriptive statistics of performance variables

Variable	Obs.	Mean	Std. Dev.	Min	Max
BTP/TA	355	2.671999	6.943867	-87.4573	42.85714
NIM/TA	351	9.248803	6.488095	-8.33	76.79
NII/TA	352	5.875297	3.372724	0.616107	29.16667
Overhead/TA	351	8.007909	3.947544	1.993336	34.78261
Loanloss/TA	348	1.737793	5.534937	-38.7755	78.93034

[25] Demirguc-Kunt and Hinga (1999) and Claessens et al. (2001) are among the notable studies that are based on the accounting identity.

Before-tax profits

We employ a widely used measure of profitability, *Before-tax profits over total assets* in this study. *Before tax profits* consists of the after tax profits and taxes, and is derived from deducting all expenses (both interest and operating expenses) from all revenue (operating and non-operating). Computing profitability as a ratio of total assets ensures that the size of individual banks is accounted for in the variable. This measure has been used by previous studies such as Clarke et al. (1999), Demirguc-Kunt and Huzinga (1999), Claessens et al.,(2001), Unite and Sullivan (2003), Lensink and Hermes (2004), Uiboupin (2005), and Okuda and Rungsomboon (2007). Before tax profits is a preferred measure of profitability than After-tax profits because of the volatility of tax expense. Thus while modeling determinants of profitability across banks, removing the tax component might lead to misleading results, as tax expenses are likely to vary across banks. In other words after-tax profits measure may not truly reflect a bank's ability to make profits.

Figure 6.8: BTP/TA across year observations

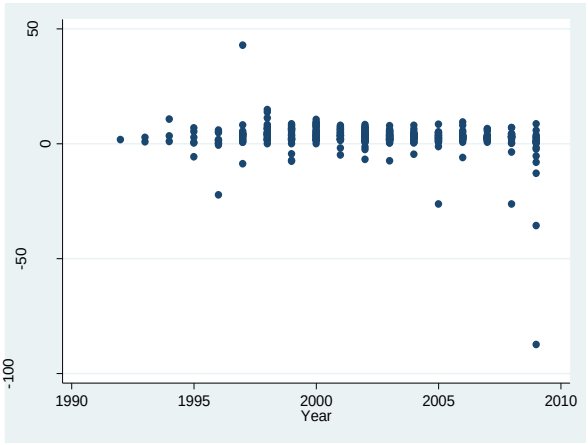


Figure 6.9 Box plot of BTP/TA

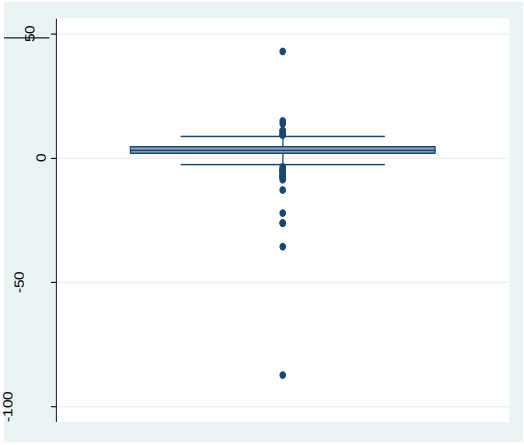


Figure 6.8 shows the relatively high variation in BTP/TA indicated in Table 6.9 This high standard deviation could be linked with the extreme negative value reported in year 2009. The box plot in Figure 6.9 shows that BFT/TA seems to be tightly distributed around 0, with evidence of outliers amongst negative values than positive values. Thus there seem to be more abnormal losses than profits among banks used in the sample.

Net interest margin (NIM)

We employ Net interest margin as a ratio of total assets (NIM/TA), defined as the difference between interest income from loans and interest expense on deposits over total assets as another measure of profitability. This is a different from its closest alternative measure, Interest rate spread, with the major difference being that while interest rate spread uses average values of interest payments; interest rate margin uses total values of interest payments (Unite and Sullivan, 2003). This study uses NIM/TA because of its broader scope in measuring interest income over interest spreads[26]. Another reason is that the sample used in this study had a lot of missing values for the spread measure, making NIM the desirable alternative. Unlike BFT/TA, NIM/TA as a measure of profitability is restricted to profits generated through interest related activities. It is widely used in foreign presence-bank performance literature, alongside BFT/TA to measure profitability/income of banks (Claessens et. al., 2001; Lensink and Hermes, 2004; Shen et al., 2009). In addition to measuring profitability, NIM/TA is also a good indicator of competition in the industry (Ho and Saunders, 1981; Maudos and Guevara 2004; Zhou and Wong, 2008), which is assumed to be driven by foreign presence. It is inversely related to the competition in the industry. Thus a higher the competition in the industry, the lower the interest margins of banks as they try to charge less for borrowing and more for savings, which leads to a reduction in intermediation costs (Saunders and Schumacher, 2000). Apart from competition, interest rate margins are known to be associated with credit risk (Angbazo, 1997; Allen, 1998), interest rate risk (Ho and Saunders, 1981; McShane and Sharpe 1985; Angbazo, 1997), operational costs (Martinez Peria and Mody, 2004) among other measures

Figure 6.10: NIM/TA across year observations

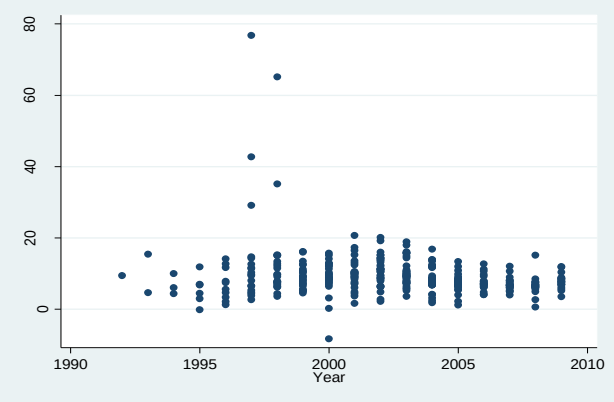
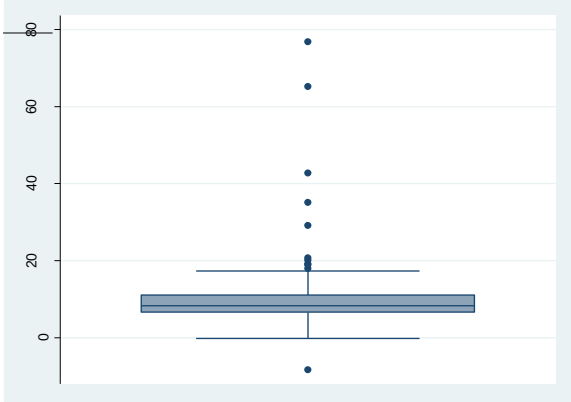


Figure 6.11 Box plot of NIM/TA



[26] Unite and Sullivan pointed out that NIM includes interbank loan receivables and deposits with other banks, which are not included in computing interest rate spreads.

Figure 6.10 show scatter plots of NIM/TA across years and bank observations respectively. It reveals that there was no particular trend in margins in the industry. It also shows that extreme values were witnessed in the mid nineties. Figure 6.11 shows the box plot of NIM/TA.this the standa the presence of extreme values It is apparent from both plots that NIM/TA is less evenly spread than BFT/TA, implying that there is higher variation in interest margins in the sample. Also, abnormal values of NIM/TA seem to be the present among positive values as opposed to negative values in the case of BFT/TA

Non-interest income

To identify the impact of foreign presence on non-lending/interest activities of a bank, the variable Non-interest income over total assets is used. Non-interest income includes fee charges, services charges, and trading revenue (Stiroh, 2004, p. 853). Deregulation, competition and technological advancement are the main drivers of Non-interest income (DeYoung and Rice, 2004). In particular, competition drives domestic banks to seek other means of revenue other than traditional banking methods (Unite and Sullivan, 2003). Technological advancement in information and technology has led to drift towards the use of the internet and ATMs rather than the usual traditional banking activities (Kim and Kim, 2010). Non-interest income was applied as a dependent variable in the following studies: Claessens et al. (2001), Unite and Sullivan (2003), Lensink and Hermes (2004), and Uiboupin (2005).

Figure 6.12: NII/TA across year observations

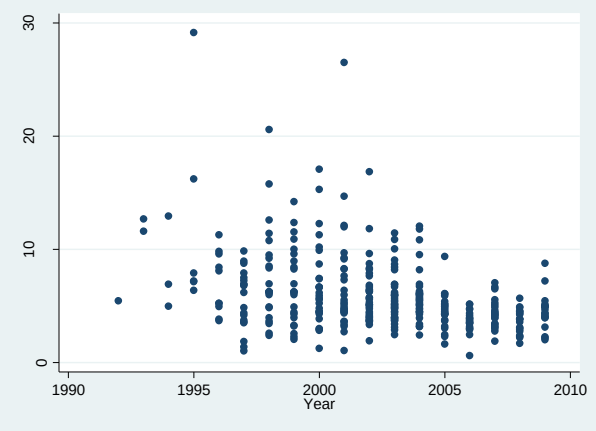


Figure 6.13 Box plot of NII/TA

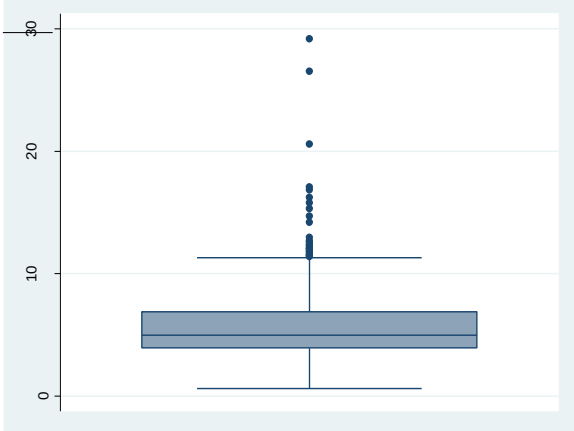


Figure 6.12 show the scatter plot of NIM/TA across year observations. It shows that prior to 2005 consolidation program, some banks reported an NII/TA of above 10%, but afterwards, all the banks in the sample reported below the said level. The box plot in Figure 6.13 shows that NII/TA has a lower variation than BTP/TA and NIM/TA, as indicated in the standard deviation value in Table 6.9.

Overheads

Another dimension towards the investigation of foreign presence impact on bank performance is to measure its effect on the costs of banking activities. This study employs Overhead costs over total assets (Overhead/TA) as a measure of operating expenses incurred to provide banking services. Overhead costs are the accounting value of overhead costs incurred by the bank to total assets (Beck et al, 2000). They are recurring expenses that are required for the functioning of a business, which includes employee wages, depreciation charges, utility and equipment expenses (Unite and Sullivan, 2003). These expenses are known to decrease when a business becomes efficient, thus it is a good measure of efficiency of management and organizational structure of a bank (Claessens, et al., 2000). Overheads are known to be higher in industries with tighter restrictions (Barth, et al., 2004). Thus lower overheads are likely to be the case in deregulated industries, especially those that allow foreign investment. It is therefore not surprising that overhead costs are used as a performance measure in analysing the effect of foreign presence in banking industry. Claessens et al. (2001), Unite and Sullivan (2003), Lensink and Hermes (2004), Uiboupin (2005), and Okuda (2007) used overhead costs in investigating the impact of foreign entry on domestic banks.

Figure 6.14: Overhead/TA across year observations

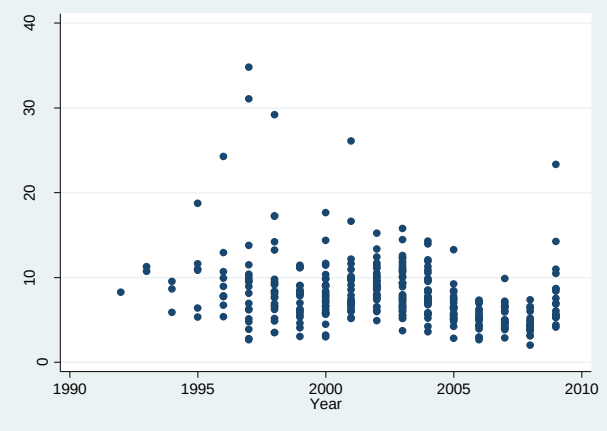


Figure 6.15 Box plot of Overhead/TA observations

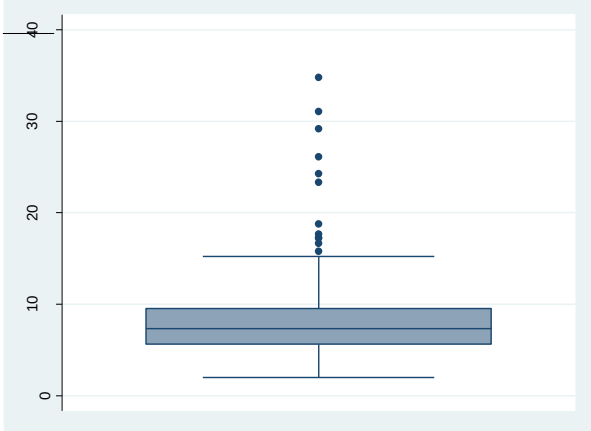


Figure 6.14 show scatter plots of Overhead/TA across year observations. As indicated by the relatively low standard deviation value in Table 6.9, Figure 6.15 reveals that Overheads show no particular trend over time. However, some banks in the pre 2005 era, report relatively high Overheads. Figure 6.15 shows that majority of the banks in the sample have an Overheard/TA value of 10% and below, with a few banks exceeding 20%.

Loan loss provisions

To measure the effect of foreign presence on banks' assessment/perception of the riskiness of loans, this study employs loan loss provisions as a percentage of total assets as a performance measure. Loan loss provision is an expense set aside to account for future losses due to bad loans. The main role of loan loss provision is to account for defaults in a bank's loan portfolios (Ahmed et al. 1999). It therefore provides a signal for credit risks in banks (Johnson, 1989; Misumeci and Skinkey, 1990; Grifith and Wallac, 1991; Elliot et al. 1991; Liu, 1995). Claessens et al. 2001, Uiboupin, 2005, and Lensink and Hermes (2004) use loan loss provision as a measure of credit quality in their investigation of the effect of foreign entry.

Figure 6.16: Loan loss/TA across year observations

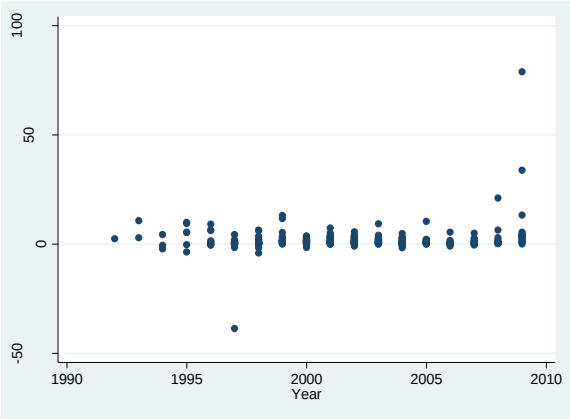


Figure 6.17 Box plot of Loan loss/TA observations

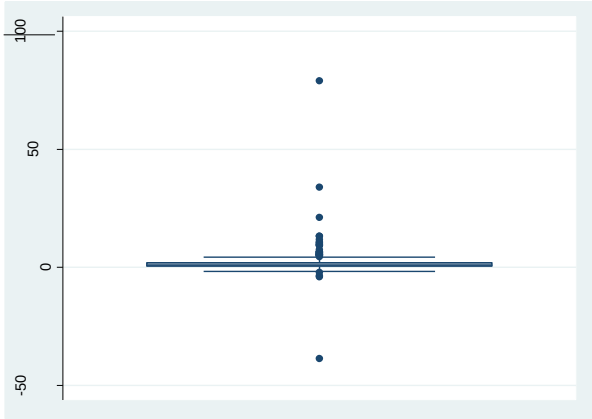


Figure 6.16 and 6.17 show scatter plots of Loan loss/TA across year observations. It could be noticed that the scatter plots show the highest level of cluster compared to other measures mentioned above. Figure 6.09 shows that Loan loss/TA is tightly distributed, with very few outliers.

Table 6.10: Measures of bank performance employed

Measure of performance	Definition	Source	Journal articles used	Justification
Before Tax Profits/Total assets	Pre-tax profit as a percentage of total assets	Computed using BankScope data	Clarke et al. (1999), Demirguc-Kunt and Huzinga (1999), Claessens et al. (2001), Unite and Sullivan (2003),Lensink and Hermes (2004)	Measure of profitability/operating performance
Net Interest Margin/Total assets	The ratio of net interest income expressed as a percentage of earning assets	Obtained form BankScope	Demirguc-Kunt and Huzinga (1999), Clarke et al. (1999), Claessens et al. (2001), Lensink and Hermes (2004), Shen et al. (2009)	Reflects income/efficiency of banks
Non-interest income/Total assets	Total non-interest operating income as a percentage of total assets	Computed using BankScope data	Claessens et al. (2001), Unite and Sullivan (2003), Lensink and Hermes (2004), Uiboupin (2005)	Measures a bank's level of non-lending activities
Overheads/Total assets	Overheads over total assets	Computed using BankScope data	Clarke et al. (1999), Denzier (1999), Claessens et al. (2001)Unite and Sullivan (2003), Lensink and Hermes (2004), Uiboupin (2005), Okuda (2007)	Measures efficiency/resource utilization
Loan Loss provisioning/Total assets	Loan loss provisions as a percentage of total assets	Computed using BankScope data	Claessens et al. (2001), Uiboupin (2005) Lensink and Hermes (2004)	Measures credit quality/bank risk

Foreign presence measures

Critical to this study is the approach towards measuring foreign presence. Similar to Shen et al. (2009), this study take identifies two definitions of foreign presence:

MicroFP: defined as is the percentage of equity owned by foreigners in an individual bank. This covers all numerical values of foreign equity from 0% to 100%. Thus variation in this variable occurs between banks and years as the case may be. Unite and Sullivan (2003) and Okuda (2007) also employed this variable in their respective specifications. Figures 6.18-6.20 show distributions of the MicroFP variable in the population.

Figure 6.18a shows the frequency distribution of MicroFP in the sample. It is quite evident that firms with no foreign equity dominate the sample, as the first column is way higher than the rest of the columns in the sample. This implies that firms with foreign equity constitute a small portion of the population of banks. Figure 6.18b shows the frequency distribution of firms with foreign equity, that is, firms with MicroFP greater than 0. It shows that banks with 40% foreign equity dominate the population by a large margin, while wholly foreign firms (100% foreign equity) constitute just above 10% of the sample of firms. In general, firms with foreign equity above 10% constitute the majority of firms with foreign equity.

Figure 6.19a shows the density of MicroFP variable across years in the sample. The distribution is basically driven by the population of banks in the industry in each year. Thus it shows sharp declines in density in between 1998 and 1999, and 2004 and 2006, due to exit of firms or merger and acquisition activity. As noted earlier, there are missing values for year 2005 as foreign equity participation was not reported for that year by the source, NDIC. Figure a 6.19b show that among banks with foreign participation, sharp declines in density was not the case. This shows that the firms with foreign equity were less affected by the large scale exits that occurred in the industry, thus indicating a higher survival rate in the industry.

Figure 6.20a shows yearly average value of MicroFP in the population of banks. It shows a remarkable surge in the mean foreign equity in the industry between the years 2004 and 2006. However, the huge rise coincides with extensive M&A activities which lead to the exit of many banks. In direct contrast to Figure 6.20a, Figure 6.20b shows that foreign equity among banks with foreign equity fell significantly between 2004 and 2006.

Figure 6.18a Frequency distribution of MicroFP in population

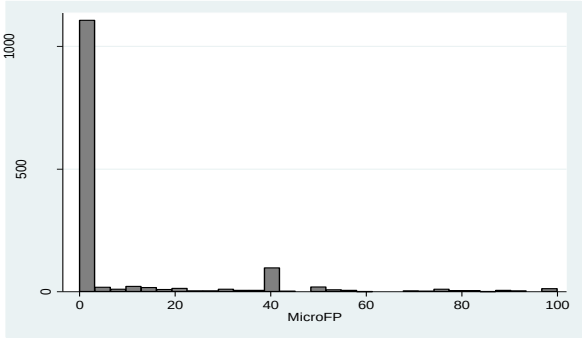


Figure 6.18b Frequency distribution of MicroFP among banks with foreign equity in the population

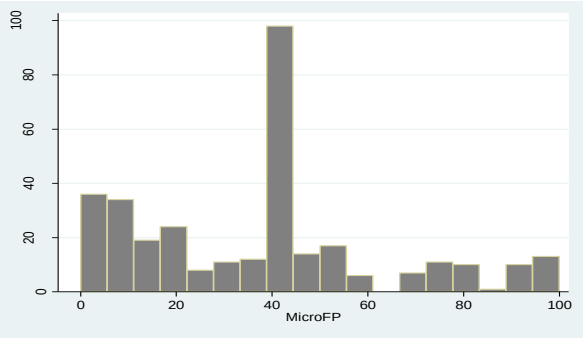


Figure 6.19a Year density of MicroFP in population

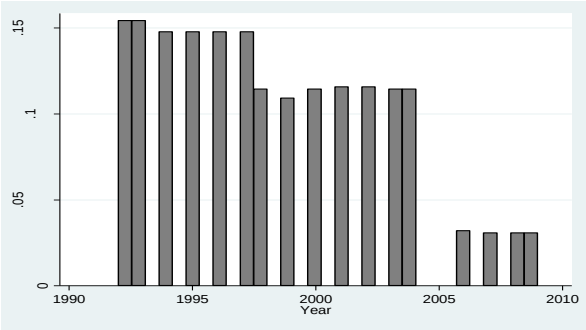


Figure 6.19b Year density of MicroFP among banks with foreign equity in the population equity

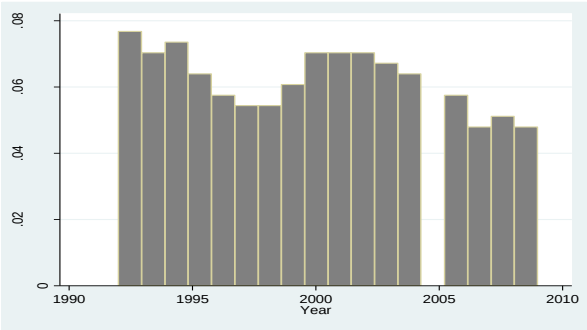


Figure 6.20a Year distribution of mean values of MicroFP in populatior

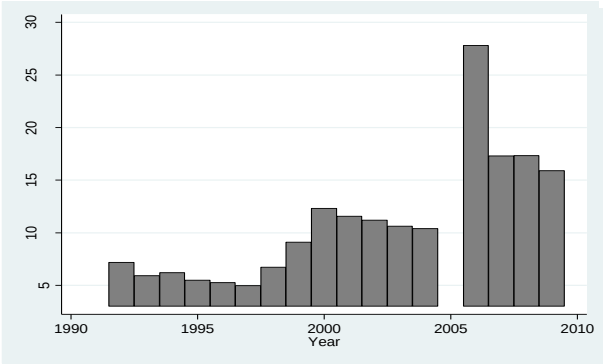
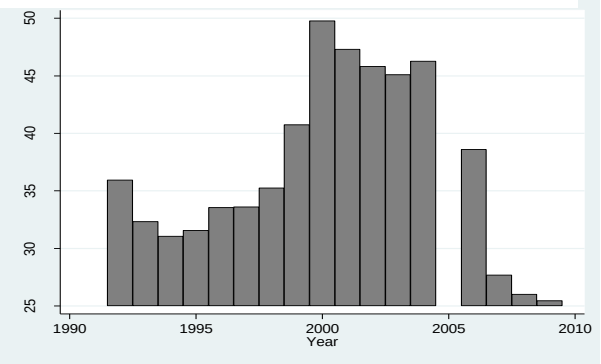


Figure 6.20b Year distribution of mean values of MicroFP among banks with foreign equity

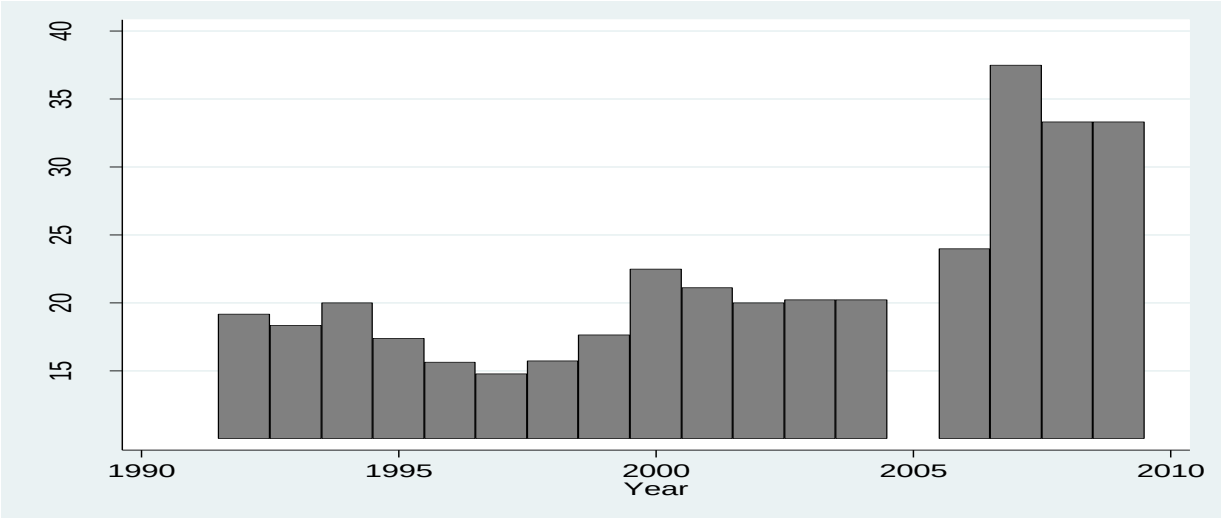


MacroFP:

This study defines MacroFP as the percentage of foreign banks in the industry for a particular year. A foreign bank is defined a bank with at least 10% foreign equity. This is a departure from Claessens et al. (2001) and Unite and Sullivan (2003), where foreign banks were defined as banks with at least 50% foreign equity. This is also different from Shen et al. (2009), where 5% foreign equity participation was used as the threshold for identifying a foreign bank. The justification for the use of 10% threshold in this study is due to the presence of regulatory caps imposed on foreign equity participation in Nigeria banking industry. For instance, the Central Bank of Nigeria (CBN) imposed a 10% equity ceiling for foreign equity participation in 2007. Another reason is that the OECD definition of Foreign Direct Investment specifies that a 10% minimum foreign equity allows for a voting power or significant influence in management.

Due to availability of population data on foreign equity participation, this study uses data on the entire banking industry to compute the MacroFP variable. This elimates the bias encountered in using sample data for foreign presence identified earlier in this study. Figure 6.16 shows the distribution of MacroFp across year observations. It can be noticed that substantial increase in foreign presence was experienced post 2005, which coincides with the consolidation era[27]. MacroFP variable varies only in year observations, unlike MicroFP variable with both cross-sectional and time dimension.

Figure 6.21 Foreign Presence (MacroFP) across year observations



[27] Part of the aims of the bank consolidation program initiated by the CBN was to promote foreign direct investment in the banking industry

Control variables

We use Equity to total assets as an independent variable that affects bank performance. It is a measure of the share of total assets owned by shareholders. It measures capitalization (Clarke et al., 1999; Demirguc-Kunt and Huzinga, 1999; Abreu and Mendes, 2001), capital adequacy (Demirguc-Kunt and Huzinga, 2000; Kasman et al. 2010), financial leverage of a bank (Galloway et al., 1997; Cole, 1998), or risk aversion (Poghosyan, 2010). A high equity to total assets signals that the need for external funding is minimal and thus higher NIM and profits (Abreu and Mendes, 2001). It also signals credit worthiness and solvency (Kasman et al. 2010). Higher equity to total assets could signal risk aversion as the bank would require higher margins for its equity financing as an alternative to external funding (Mcshane and Sharpe, 1985; Maudos and Guevara, 2004). There is also a need to cover the cost arising from differential equity and debt financing taxes (Kasman et al. 2010).

On profitability, a wide range of literature opines that banks with high equity to total assets are more profitable (Dietrich and Wanzenried, 2010). These include Demirguc-Kunt (1999), Goddard et al. (2004), Bennaceur and Goaied (2001, 2008), Pasiouras and Kosmidou (2007), and Dietrich and Wanzenried (2010); they indicate that high capitalization results in cost reduction in terms of bankruptcy costs. This is contrary to the risk-return hypothesis, where low capitalized banks are expected to be less risk averse and therefore achieve higher returns. The fall in the need for external funding achieved through capitalization also boosts profitability (Dietrich and Wanzenried, 2010).

Customer and short term funding to total assets is also employed as a function of bank performance It consists of short and long term deposits, and other non-deposit short term funding as a share of total assets (Demirguc-Kunt and Huzinga, 2000; Claessens et al., 2001; Uiboupin 2005; Lensink and Hermes, 2004). It is a measure of liquidity risk (Ben-Khedhirir et al. 2008 Bank of Botswana, 2009).

In addition, this study uses Non-interest earning assets to total assets as a regressor in the specifications. It consists of cash, non-interest earning deposit at other banks, and other non-interest earning assets over total assets (Claessens et al., 2001; Unite and Sullivan 2003; Lensink and Hermes, 2004). These assets bear both financial and opportunity costs, where the opportunity cost is the cost of foregoing its use in generating income/revenue (Fathi, 2010).Profits are therefore deemed to be negatively related to non-interest earning assets (Demirguc-Kunt and Huzinga, 2000).

We also account for bank concentration in our model.We define bank concentration ratio (CR5) as the share of the five largest banks in terms of number of branches, to total branches in the industry.

Figure 6.22a Concentration ratios in the industry

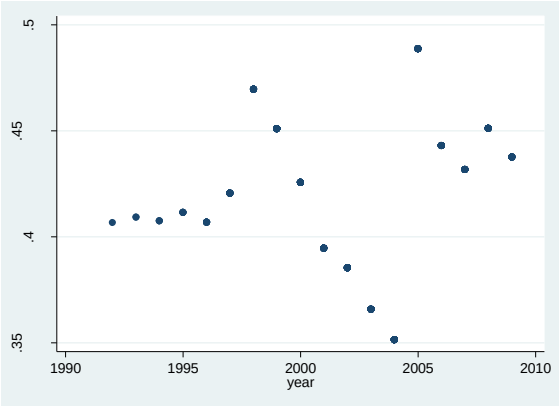
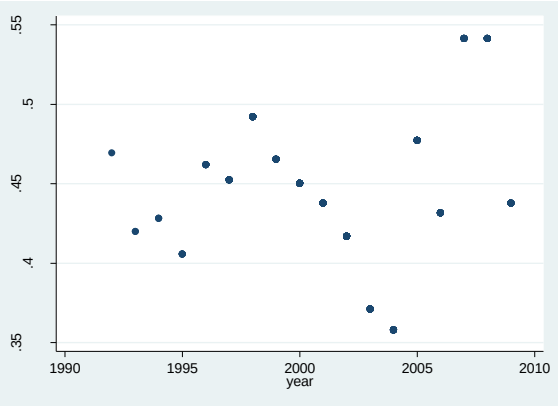


Figure 6.22b Concentration ratios among local banks



Macroeconomic variables

To account for the effect of macroeconomic factors on foreign presence, this study uses measures of GDP growth, GDP per capita, Real interest rate, and inflation as independent variables.

The Gross domestic product (GDP) is basically a demand-side indicator (Molyneux and Thorton 1992; Goddard et al., 2004). GDP growth/per capita controls for differences in income/development in cross-country studies (Demirguc-Kunt and Huzinga, 1999; Claessens et al., 2001; Liuhto et al., 2006); but for studies based on a particular country, it controls for changes in income levels (Unite and Sullivan, 2003) or business cycles (Wu, 2007; Shen et al., 2009). Demirguc-Kunt and Hu (2000) show that bank profits follow the business cycle. Thus growth effects on bank profitability can either be procyclical or countercyclical (Bikker and Hu, 2001). Empirical evidence shows that the effects of cycles vary according to the measure of performance implemented. Arpa et al. (2001) show that while GDP growth effects on credit risk are procyclical, its effect on net income are countercyclical. The rise in risk associated with downswings leads to a reduction in lending activity and a corresponding rise in loan loss provisions as loan quality declines (Athanasoglou et al. 2008). On the other hand, economic booms are usually associated with a surge in credit activity which can increase interest margins (Friedman and Kuttner, 1993; Calza,2003; Athanasoglou et al. 2008). This increase in credit activity can be attributed to the improvement in financial conditions of borrowers during an economic upturn (Albertazzi and Gambacorta, 2009).

Inflation is measured as the percentage change in Consumer Price Index (CPI). Economic theory predicts that inflation is positively related to nominal interest rates (Mankiw and taylor 2008). Thus higher

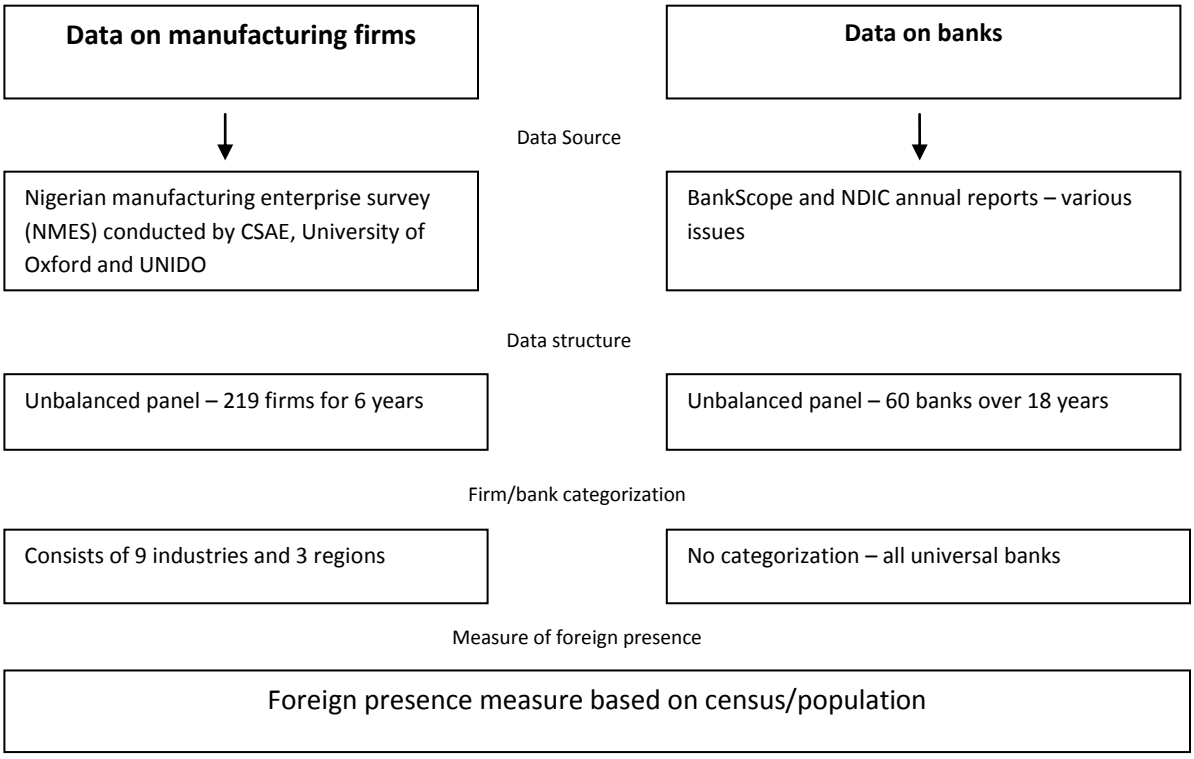
inflation is expected to lead to higher interest margins/spreads and profits (Demirguc-Kunt and Huzinga, 1999; Claessens et al.,2001; Unite and Sullivan, 2003).But the increase in profits depends on the corresponding increase in wages and operating expenses (Revell, 1979). It also largely depends on whether the inflation was anticipated or unanticipated. If inflation is anticipated, banks would adjust their interest rates, salaries, in other to make profits (Perry, 1992; Schwartz, 1995).

The macroeconomic effects of interest rates include the reduction on investment, output, and employment. However, the microeconomic impacts can be quit different, especially in the case of banks. Interest rates are known to be positively associated with bank profits. Samuelson (1945) points out that an increase in interest rates will substantially increase profits of banks. However, Hancock (1945) show that the response of profits on loan rates are elastic, while that of deposit rates are inelastic. This is stemmed from Samuelson's idea, which states, "Increased interest rates help any organization whose average time period of disbursements is greater than the time period of its receipts" (Samuelson, 1945, p.19). Thus a commercial bank is expected to be more profitable than a savings bank (Samuelson, 1945; Hannock, 1985). Furthermore, the volatility of interest rates is known to affect bank margins (Ohlson et al., 1980). This is linked to the fact that deposits (liabilities) are more interest sensitive than loans (assets), thus liabilities tend to grow faster (Ho and Saunders, 1981). Differences in maturity of assets and liabilities create a positive risk premium for loans and a negative risk premium for deposits, which are the necessary conditions for intermediation (Pyle, 1971; Ho and Saunders, 1981). Demirguc-Kunt and Huzinga (1999) and Claessens et al. (2001) used interest rates as an independent variable in their estimations.

6.3 Comparing data on Nigerian manufacturing firms and banks used in this study

The data employed for our investigation of spillovers differ in various aspects. The main data on manufacturing firms were obtained on request from a survey on Nigerian enterprises conducted by CSAE and UNIDO, while the main source of data on banks was obtained from BankScope database. Manufacturing data has higher cross-sectional dimension (219 firms) than banking data (60 banks), while the opposite is the case for time dimension as data on banks consist 18 year observations compared to 6 year observations in the case of manufacturing firms. The important similarity of both datasets is therefore the fact that their respective measures of foreign presence used in this study are based on population or census data.

Figure 6.22 Differences between data on manufacturing firms and data on banks



Chapter 7: Model Specification and Econometric results

7.1 Modeling FDI spillovers in Nigerian manufacturing

The approach followed in this study is to model productivity of manufacturing firms through an augmented production function. This approach has been widely used in empirical investigation of spillovers. However, the extent to which we attempt to explain variations in productivity is limited to the variables available in the NMES dataset. We also limit the spillover estimation to intra-sectoral spillovers, due to unavailability of CBN data on foreign presence within regions. This section estimates the effect of foreign presence on productivity using two variants of an augmented Cobb-Douglas model: the first relates inputs and other relevant variables to output, while the second specifies Value added as a dependent variable. We present results using the two alternative measures of foreign presence: FP which is based on the CBN census data, and FPS which is based on the NMES sample.

7.1.2 Output model

Following Aitken and Harrison (1999) Djankov and Hoeikman (2000), Konishita (2000), we relate the value of output produced by a firm, to inputs of production: capital, labour, materials. Also, we include control variables that are deemed to affect output in Nigerian manufacturing, with a measure of foreign present into the model. Thus:

$$Y = c + \beta_1 K_{ijt} + \beta_2 L_{ijt} + \beta_3 M_{ijt} + \beta_4 A_{ijt} + \beta_5 FP_{jt} + \beta_6 FE + \varepsilon_{it} \qquad (1)$$

Where Y is the measure of productivity (log of output or value added), K is the log of real capital, L is the log of labour, M is the log of raw materials, FP_s is the measure of foreign presence which captures sectoral spillovers, while ε is the stochastic error term. Subscripts i, j, and t denote firm, sector, and time respectively. We exclude dummy variables for sectors and regions for two reasons: First is that the F tests indicate that the dummies are statistically jointly insignificant, and secondly the dummy variables are marred with missing observations, which would reduce the number of observations considerably[28]. Table 7.1 presents the variable definitions for variables used in both the Output and Value added models.

[28] Attempts to add dummy variables into the equation led to the loss of 309 observations

At this stage, we impose the strong assumption that there is no significant firm specific or time specific effects in the model, and apply Ordinary least squares (OLS) estimations to the model. As expected from data with a considerable cross-sectional dimension, Breusch-Pagan and Cook Weisberg test for heteroskedasticity show evidence of heteroskedasticity in all the models. Thus all OLS results are corrected for heteroskedasticity and therefore the standard errors are robust.

Table 7.1 Variable names, definitions, and similar usage in literature

Variable label	Variable name	Definition	Similar usage in Literature
	Dependent Variable		
Value added	Value added in natural logarithms	Output- (Total indirect costs + Raw materials	Blomstrom and Sjoholm (1999), Konishita (2000), Takii (2005), Sembenelli and Siotis (2008), Girma et al. (2001), Barrios and Strobl (2002), Todo and Miyamoto (2006),
Y	Output	Value of manufactured output	Kosteas (2008), Blalock and Gertler (2008), Feinberg and Majumdar (2001),
	Independent Variables		
K	Capital	Sum of Plant and equipment replacement value and Land and buildings market value	Harris and Robinson (2004), Keller and Yeaple (2005), Castellani and Zanfei (2003, 2007), Girma (2005)
L	Labour	Total number of people employed by the firm	Aitken and Harrison (1999), Gorg et al. (2006), Liu (2008), Takii (2005), Girma et al. (2008), Yasar and Paul (2007)
M	Raw materials	Value of raw materials used in production	Aitken and Harrison (1999), Peri and Urban (2006), Javorcik (2004), Lopez and Cordova (2002), Konings (2001)
FE	Foreign equity participation	Dummy for firms with any foreign ownership	Konishita (2000), Dimelis and Louri (2002, 2004), Yasar and Paul (2007), Khalifah and Adam (2009)
Age	The age of the frm	Present year-Year of inception	Chuang and Lin (1999), Girma (2005), Castellani and Zanfei (2003, 2007)
FP	Spillover variable from CBN	ii) Data on cumulative FPI in million naira (local currency) in each sector from CBN	
FPS	Spillover variable from sample	Defined as the share of foreign employment in industry – based on the NMES sample	Aitken and Harrison (1999), Javorcik (2004)

Table 7.2 shows the OLS results for the Output model for all firms (both domestic and foreign) and domestic firms. As in the case of most Cobb-Douglas models, the R^2 is very high, ranging from 0.9483 to 0.9711. This implies that more than 90% of variation in output can be explained by each model. All four models, (1)-(4), show positive and highly significant (0.1%) coefficients for the inputs of production: capital (K), labour (l), materials (M); implying that increases in inputs of production results in an increase

in outputs, this is expected due to the monotonicity assumption of production functions[29]. Exports (Exp) and Investment (Inv) dummies are both significant and statistically significant at 5% for models (1) and (2). This means that our results show that firms that export their products outside Nigeria, and firms that engage in investment are more productive than others. In terms of foreign presence, the positive and statistically significant coefficients for FE in (1) and (2) show that foreign firms are more productive than domestic firms as by about 13%. However, the variable of interest in this study FP, which measures the effect of foreign presence on all firms for (1) and (3), and FDI spillovers to domestic firms for (4) is not statistically significant. The p-value for the Ramsey Reset test shown in Table 7.2 shows evidence of misspecification for (1) to (3), but (4) is well specified.

Table 7.3 shows similar results to Table 7.2, but the difference being in the measure of foreign presence. Foreign presence in Table 7.2 is based on census data from the Central Bank of Nigeria, while foreign presence FPS in Table 7.2 is based on share of foreign employment computed from the NMES sample. Estimates shown on both tables are very similar in both direction and significance but the measure of foreign presence FPS in Table 7.3 is negatively signed, albeit statistically insignificant. Thus the two sets of estimations show no evidence of spillovers. We therefore investigate another variant of the Cobb-Douglas production function, using the value added in production as a dependent variable.

[29] Monotonicity property of a production function implies that an increase in inputs does not lead to a decrease in outputs (Varian, 1992)

Table 7.2 OLS results for Output model with FP variable (1998-2003)

Dependent: Output	(1) All firms	(2) All firms	(3) All firms	(4) Dom. firms
K	0.0305***	0.0311***	0.027**	0.037***
	(3.45)	(3.53)	(3.1)	(3.70)
l	0.214***	0.216***	0.230***	0.209***
	(9.74)	(9.84)	(11.05)	(8.12)
M	0.757***	0.759***	0.763***	0.742***
	(61.27)	(61.74)	(63.01)	(51.96)
Age	0.000437	0.000113	0.000692	-0.00138
	(0.27)	(0.07)	(0.42)	(-0.68)
FE	0.132**	0.138**		
	(2.25)	(2.87)		
FP	0.00689		0.00741	0.00807
	(1.72)		(1.84)	(1.66)
Constant	3.393***	3.369***	3.315***	3.570***
	(11.87)	(12.19)	(11.59)	(20.69)
N	681	681	681	548
R^2	0.9707	0.9706	0.9705	0.9478
Ramsey Test	0.0007	0.005	0.0001	0.0518

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

Table 7.3 OLS results for Output model with FPS variable (1998-2003)

Dependent: Output	(1) All firms	(2) All firms	(3) All firms	(4) Dom. firms
K	0.0321***	0.0311***	0.0282***	0.0386***
	(3.58)	(3.53)	(3.20)	(3.80)
l	0.2159***	0.216***	0.233***	0.213***
	(9.81)	(9.84)	(11.19)	(8.24)
M	0.760***	0.759***	0.766***	0.745***
	(61.03)	(61.74)	(62.86)	(51.58)
Age	-0.000101	-0.000113	0.0001741	-0.00226
	(-0.06)	(-0.07)	(0.10)	(-1.11)
FE	0.140**	0.138**		
	(2.36)	(2.35)		
FPS	-0.0417		-0.0359	-0.05594
	(-0.69)		(-0.59)	(-0.80)
Constant	3.358***	3.369***	3.274***	3.5496***
	(22.12)	(22.41)	(22.12)	(20.30)
N	678	681	678	545
R^2	0.9706	0.9706	0.9703	0.9471
Ramsey Test	0.0006	0.0005	0.0001	0.0894

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

7.1.3 Value added model

An alternative measure of productivity of a firm is the value added measure. In this study, Value added is defined as: Output – (total indirect costs + raw materials). Following Konishita (2000), Takii (2005) and De Propris and Driffield (2006) we specify a Value added model:

$$Y = c + \beta_1 K_{ijt} + \beta_2 L_{ijt} + \beta_3 A_{ijt} + \beta_4 FP_{jt} + \beta_5 FE + \varepsilon_{it} \quad (2)$$

Where Y measures Value added, and all other variables are as previously defined in sub-section 7.1.2. However, the variable that measures the value of raw materials M is excluded from the specification, as it is a component of the dependent variable.

Table 7.4 shows the OLS results for the Value added model on all firms, and domestic firms. The R^2 in the models (1)-(3) show the about 76% of the variation in Value added can be explained by the model, while (4) show about 60% of the same. But importantly, as indicated by the p-value of the Ramsey Reset test, most of the specifications in Table 7.4 show no evidence of misspecification. Similar to the Output model, the inputs of production are positive and highly statistically significant at 0.01%. All models show that firms that export are more productive, but investment has no effect on productivity.

Of particular interest are the variables that measure foreign participation. Models (1) and (2) in Table 7.4 show that foreign ownership increases productivity by 65% and 68% respectively. Similarly, the FP variable is positive and statistically significant in all three models. In (3), FP is positive and statistically significant at 5%, showing a clear evidence of positive FDI spillovers to domestic firms in Nigerian manufacturing.

A crucial goal of this study is to compare the results of spillover measures. Thus Table 7.5 shows results similar to Table 7.4, except for the use of FPS which the foreign presence measure based on the NMES sample in Table 7.5. From Table 7.5, FPS is insignificant in all three models, showing no evidence of productivity spillovers or foreign presence effect on all firms. Thus it is quite interesting that the use of foreign presence measures of the same country from two different sources yielded different results. However, we do not make conclusions with the estimates in Tables 7.4 and 7.5, as they do not account for firm specific effects that might affect productivity. We therefore turn our investigation to the use of panel data techniques of estimation to confirm if FDI spillovers occur in Nigerian manufacturing.

Table 7.4 OLS results for Value added model with FP variable (1998-2003)

Dependent: Value added	(1) All firms	(2) All firms	(3) All firms	(4) Dom. firms
K	0.155***	0.161***	0.145***	0.163***
	(7.10)	(7.38)	(7.38)	(6.83)
l	0.8567***	0.871***	0.915***	0.804***
	(16.95)	(17.30)	(20.19)	(13.87)
Age	-0.00270	-0.0041	-0.00270	-0.0087
	(-0.63)	(-0.96)	(-0.62)	(-1.68)
FE	0.655***	0.688***		
	(4.35)	(4.56)		
FP	0.0261**		0.0298***	0.0208*
	(2.45)		(3.40)	(1.64)
Constant	10.05***	10.02***	9.972***	10.23***
	(37.88)	(37.68)	(40.77)	(35.29)
N	662	662	662	531
R^2	0.7640	0.7619	0.7614	0.6008
Ramsey Test	0.0476	0.0531	0.0009	0.2234

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

Table 7.5 OLS results for Value added model with FPS variable (1998-2003)

Dependent: Value added	(1) All firms	(2) All firms	(3) All firms	(4) Dom. firms
K	0.159***	0.161***	0.148***	0.165***
	(7.14)	(7.38)	(6.63)	(6.75)
l	0.863***	0.871***	0.980***	0.810***
	(17.06)	(17.30)	(22.03)	(14.03)
Age	-0.00346	-0.0041	-0.0022	-0.0103
	(-0.79)	(-0.96)	(-0.51)	(-1.98)
FE	0.7008***	0.688***		
	(4.62)	(4.56)		
FPS	0.1007		0.156	0.0377
	(0.64)		(0.97)	(0.21)
Constant	10.03***	10.02***	9.875***	10.25***
	(37.71)	(37.68)	(36.86)	(35.38)
N	659	662	659	528
R^2	0.7625	0.7619	0.7547	0.5963
Ramsey Test	0.0396	0.0531	0.0007	0.1843

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

7.1.4 Panel data modeling: Manufacturing firms data

The time and cross-sectional dimensions of the data (see Chapter 6 for details of data) used for the investigation of FDI spillovers allow for the use of panel data techniques which account for heterogeneity across firms and years. Thus both equations (1) and (2) can be re-specified as

$$Y_{it} = \beta_1 + \sum_{i=2}^{k} \beta_i X_{it} + \pi_i + \alpha_t + \varepsilon_{it} \quad (3)$$

Y is the measure of productivity, output or value added; X_j are the explanatory variables that affect productivity; π_i controls for firm-specific unobserved heterogeneity; α_t accounts for the shifts in intercept over time or time specific effects; while ε_{it} is the stochastic error term. Subscripts i and t denote firm and time respectively. An important extension of (3) from (1) and (2) is that the (3) includes π_i which accounts for unobserved heterogeneity of firms which can result in inefficient estimates and invalid standard errors if OLS were used, especially in cases where it is correlated with the explanatory variables (Dougherty, 2006). The assumptions regarding the correlation of unobservable firm heterogeneity with the explanatory variables is the major difference between the two major panel data techniques: Fixed effects and Random effects. While Fixed effects approach assumes that π_i and X_j are correlated, Random effects assumes that they are uncorrelated. The choice between Fixed and Random effects can be formally tested using the Hausman test. It tests for the presence of systematic differences in coefficients of Fixed and Random effects models. The statistically significance of the test, which is basically a χ^2 test, is an evidence in support of the Fixed effects approach. In all the estimations reported in this Chapter, the Hausman test clearly indicates that the Fixed Effects model is preferred to the Random effects model. Thus our panel data regressions in this study will be restricted to Fixed effects models.

Fixed effects approach

The form of Fixed effects model used in this study is the least-square dummy variable model. It is based on the assumption that the unobservable firm heterogeneity π_i is the coefficient of a dummy variable D_i

$$Y_{it} = \beta_1 + \sum_{i=2}^{k} \beta_j X_{it} + \sum_{1}^{n} \pi_i D_i + \alpha_t + \varepsilon_{it} \quad (4)$$

Where D_i is the dummy variable for each individual firm in the sample, other variables remain as previously defined. The consequence of the inclusion of the dummy variable is that the each cross-sectional unit (firm in this case) will have its own constant term in the model, while the slopes remain fixed across firm observations (Baum, 2006).

The application of Fixed effects models to FDI spillovers model imply that in addition to accounting for observable factors which are deemed to affect productivity in the model, the model also accounts for unobservable factors that may affect productivity such as managerial skill, know-how, and other forms of ownership advantages. Thus we apply the same variables specified in equations (1) and (2) using fixed effects estimation techniques.

Table 7.6 show the fixed effects estimates for the Output model on All firms and Domestic firms. Similar to the OLS results in Table 7.2, the R^2 is very high, ranging from 0.9241 to 0.9668 in the four models specified. Thus more than 92% of the variation in output can be explained by then each of the models. An important measure in fixed effects models is the Rho value which measures the percentage of variation in dependent variable related to differences in cross-sectional observations. Thus in the models in Table 7.6, (1)-(3) show that more than 75% of the variation in Output is attributed to firm specific heterogeneity. In the case of (4), which consists of domestic firms exclusively, a slightly lower Rho of 0.6578 is obtained. This may be connected to the fact the model on domestic firms may be have less firm specific heterogeneity compared to the models with both domestic and foreign firms. This seems reasonable because foreign firms are quite different from domestic firms in various aspects.

Models (1)-(3) show that that input measures such as labour and materials are positive and highly significant, while capital K is insignificant in all models. Exports and Investment are important determinants of variations in Output as indicated by their positive and statistical significance in all four models. Unlike Table 7.2 which is based on OLS estimates, our variable of interest, FP is positive and statistically significant in all three models in the Fixed effects estimates reported in Table 7.6. Of particular importance is the FP coefficient for model (4) which measures FDI spillovers to domestic firms. The coefficients show a strong evidence of FDI productivity spillovers to domestic firms in Nigeria. The coefficient of 0.0465 imply that a unit increase in the level of foreign presence in an industry will result in about 5% increase output

We also compare the FP coefficients with that of its alternative measure FPS in Table 7.6. In direct contrast, Table 7.7 show negative and statistically significant coefficients for foreign presence in all three

models. This is strong evidence that foreign presence measures based on a sample can yield misleading results.

Table 7.6 Fixed effects results for Output model with FP variable (1998-2003)

Dependent: Output	(1) All firms	(2) All firms	(3) All firms	(4) Dom. firms
K	-0.0165	-0.0140	-0.0194	0.0513
	(-0.36)	(0.17)	(-0.42)	(0.70)
l	0.106*	0.114**	0.109**	0.0884
	(2.69)	(2.76)	(2.78)	(2.03)
M	0.709***	0.705***	0.708***	0.7102***
	(30.67)	(30.18)	(30.72)	(27.36)
Age	-0.0138	-0.0033	-0.0141	-0.0218*
	(-1.53)	(-0.60)	(-1.56)	(-2.06)
FE	0.1063	0.1036		
	(0.80)	(0.71)		
FP	0.0331***		0.0331***	0.0465***
	(3.20)		(3.20)	(3.45)
Constant	5.541***	5.426***	5.630***	4.5150***
	(6.77)	(6.21)	(6.95)	(3.92)
N	681	681	681	548
R^2	0.9576	0.9668	0.9563	0.9241
Rho	0.7647	0.7519	0.7813	0.6578

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7.7 Fixed effects results for Output model with FPS variable (1998-2003)

Dependent: Output	(1) All firms	(2) All firms	(3) All firms	(4) Dom. firms
K	-0.0130	-0.0140	-0.0161	0.0426
	(-0.28)	(0.17)	(-0.35)	(0.57)
l	0.116**	0.114**	0.119**	0.105*
	(2.93)	(2.76)	(3.02)	(2.39)
M	0.705***	0.705***	0.703***	0.706***
	(30.33)	(30.18)	(30.37)	(26.97)
Age	-0.00673	-0.0033	-0.00703	-0.0142
	(-0.77)	(-0.60)	(-0.81)	(-1.37)
FE	0.1149	0.1036		
	(0.85)	(0.71)		
FPS	-0.179*		-0.177*	-0.251*
	(-2.21)		(-2.18)	(-2.36)
Constant	5.547***	5.426***	5.642***	4.741***
	(6.36)	(6.21)	(6.91)	(4.05)
N	678	681	678	545
R^2	0.9653	0.9668	0.9643	0.9401
Rho	0.7663	0.7519	0.7851	0.6078

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7.8 shows the estimates of the Value added model using Fixed effects estimation techniques. The R^2 show of the four models show that between 51-68% of variation in Value added can be explained by the models. But of higher magnitude, is the Rho value, which indicates that between 72-82% of the variation in Value added can be attributed to firm specific heterogeneity. Our model of interest (4), show that the inputs of production are statistically significant, the age of a firms, reduces its productivity, and firms that invest have higher value added. Also, of particular interest, the FP variable is positive and statistically significant in model (4), implying that the value added model also show evidence of FDI spillovers to domestic firms. It indicated that a unit increase in FP would lead to a 7% rise in value added of domestic firms.

We also compare our results with that of the models with the FPS variable. As in the case of the output models, Table 7.9 show negative and statistically significant coefficients for all the models.

Table 7.8 Fixed effects results for Value added model with FP variable (1998-2003)

Dependent: Value added	(1) All firms	(2) All firms	(3) All firms	(4) Dom. firms
K	0.157	0.162	0.170	0.339*
	(1.56)	(1.60)	(1.69)	(2.19)
l	0.460***	0.473***	0.449***	0.425***
	(5.47)	(5.61)	(5.35)	(4.72)
Age	-0.0357	-0.0168	-0.0346	-0.0736*
	(-1.78)	(-0.90)	(-1.73)	(-2.12)
FE	-0.523	-0.531		
	(-1.76)	(-1.78)		
FP	0.0607**		0.0611**	0.0735*
	(2.61)		(2.63)	(2.48)
Constant	12.23***	11.92***	11.93***	9.30***
	(7.34)	(7.13)	(7.18)	(3.94)
N	662	662	662	531
R^2	0.6163	0.6821	0.6720	0.5166
Rho	0.8155	0.8082	0.7857	0.7285

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7.9 Fixed effects results for Value added model with FPS variable (1998-2003)

Dependent: Value added	(1) All firms	(2) All firms	(3) All firms	(4) Dom. firms
K	0.162	0.162	0.175	0.319*
	(1.61)	(1.60)	(1.73)	(2.05)
l	0.475***	0.473***	0.466***	0.447***
	(5.66)	(5.61)	(5.54)	(4.98)
Age	-0.0239	-0.0168	-0.0230	-0.0376
	(-1.25)	(-0.90)	(-1.20)	(-1.71)
FE	-0.503	-0.531		
	(-1.69)	(-1.78)		
FPS	-0.388*		-0.401*	-0.502*
	(-2.14)		(-2.21)	(-2.17)
Constant	12.20***	11.92***	11.92***	9.703***
	(7.30)	(7.13)	(7.16)	(4.07)
N	659	662	659	528
R^2	0.6585	0.6821	0.7115	0.5399
Rho	0.8188	0.8082	0.7896	0.70

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Overall, our results of the estimates on manufacturing firms show evidence of positive productivity spillovers in both OLS models and Fixed effects. The evidence of spillovers is stronger in Fixed effects models than the OLS models. In addition to evidence of FDI spillovers to domestic firms, the estimates also show that foreign presence increases productivity of the overall firms in the industry (both foreign and domestic). Also, there is evidence that foreign firms are more productive than domestic firms in Nigerian manufacturing sector.

In addition, the results show that foreign presence measure based on a limited sample can lead to misleading results as they show evidence of negative spillovers, which is contrary to the positive spillovers obtained from the CBN based measure based on a census of firms.

7.2 Modeling the impact of foreign entry on bank performance

In this section, we estimate the impact of foreign presence on the performance of banks using data on Nigerian banks sourced from BankScope. Our approach is to estimate the impact on key indicators of performance commonly used in literature. This involves the estimation of impact of foreign presence on measures of profitability, costs, and risk. Thus the specification is based on the following accounting identity:

Before Tax Profits/Total assets = (Net Interest Margin + Non-interest income – Overheads – Loan Loss provisioning)/Total assets

All the variables that constitute the accounting identity will be used as dependent variables in our model. We therefore specify the model as

$$P'_{it} = c + \beta_1 MacroFP_t + \beta_2 BS'_{it} + X_t + \varepsilon_{it} \quad (5)$$

$P'$is a vector of measures of bank performance. We define $MacroFP_t$ as the percentage of foreign banks to total banks in a given year. Foreign banks are banks with at least 10% foreign equity ownership. $BS'$is a vector of bank specific variables known to affect the performance of banks; while X_t is a vector of macroeconomic variables. ε_{it} denotes the error term.

Empirical models of bank performance are marred by lack of clear theoretical underpinnings. Thus the same explanatory variables are used for different dependent variables that measure bank performance. This is true of empirical studies such as. Claessens et al. (2001), Unite and Sullivan (2003) Lensink and Hermes (2004) Liuhto et al. (2006). This study therefore follows these studies closely in choice of variables. However, dummy variables such as CRI which measure the periods of crises in Nigerian banking industry are peculiar to this study.

Table 7.10 Variables names, definitions, and similar usage in literature (banks)

Variable label	Variable	Definition
Dependent variables		
NIM	NIM/ TA	Net interest margin over total assets: interest income minus interest expense over total assets
NII	NII/ TA	Noninterest income over total assets
BTP	BTP/ TA	before tax profits over total assets
OV	Overhead /TA	personal expenses and other non-interest expenses over total assets
LLP/TA	LLP/ TA	Loan loss provisions over total assets
Independent variables		
EQ	Equity/TA	book value of equity (assets minus liabilities) over total assets
NEA	NEA/TA	cash, non-interest earning deposit at other banks, and other non-interest earning assets over total assets
CSTF	CSTF/TA	all short term and long term deposits plus other non-deposit short term funding over total assets
OV	Overhead / TA	
LN	loans	
	Macroeconomic variables	
GCAP	GDP/cap	real GDP per capita in thousands of US$
GDP	Growth	annual growth rate in real GDP
INF	Inflation	the annual inflation of the GDP deflator
R	Real interest	the nominal interest rate minus rate of inflation
MacroFP	MacroFP	The number of foreign banks to total number of banks. Foreign banks are banks with at least 10% foreign ownership
MicroFP	MicroFP	% of equity owned by foreigners
GVT	Government	% of equity owned by governement
CRI	Crises dummy	Dummy variable that captures years of bank industry instability
CONC	Bank concentration (CR5)	Ratio of number of branches of the 5 largest banks to total branches in the industry

Table 7.11 shows OLS estimates of five different models of bank performance on domestic banks. The explanatory variables in each model explain between 34-49% of variation in each of the measures of performance. The Ramsey Reset test shows evidence of misspecification in all models. Most of the bank specific variables are insignificant in all five models. However, non-earning assets NEA increase positive relationship with Overheads. This is similar to Claessens et al. (2001) findings based on first differences. The crises dummy is negative and statistically significant for the measures of profitability and risks, implying that in periods of crises, a significant loss of profits, non-interest income and rise in loan loss provisions due to the high risk in those periods. Thus the coefficients are representative of the Nigerian banking industry. As in the case of Hermes and lensink (2004), GDP per capital show significant relationship with profits BTP and margins NIM.

Our variable of interest, MacroFP, shows positive and statistically significant results for measures of profits and non-interest income. The result is similar to the findings in Lensink and Hermes (2004), Okuda and Rungsomboom (2007) and Xu (2011). The positive effect of foreign presence is also true for NII in estimations that include both foreign and domestic firms, as shown in Appendix 7.1, Table A1. The measure of the effect of foreign equity on bank performance MicroFP, is insignificant in all the five models, as indicated in Appendix 7.1, Table A2.

As in the case of the estimates on manufacturing models, we compare the foreign presence measure with an alternative measure computed from the sample of Nigerian banks on BankScope, MacroFPS, as shown in Table 7.12. It is evident that there is no statistically significant effect of MacroFPS on all the models.

Table 7.11 OLS results for domestic firms with MacroFP variable (1992-2009)

	(1) BTP	(2) NIM	(3) NII	(4) OV	(5) LLP
EQ	-0.000912	0.127	0.00351	-0.00194	0.0295
	(-0.02)	(1.31)	(0.18)	(-0.09)	(0.94)
NEA	0.00360	0.102	-0.0280	0.186***	-0.0825
	(0.04)	(1.12)	(-0.90)	(4.01)	(-1.05)
CSTF	-0.000291	0.232*	-0.0243	0.0411	0.0509
	(-0.01)	(2.53)	(-1.00)	(1.44)	(1.19)
OV	-0.649*	0.429*	0.462**		0.506
	(-2.25)	(2.17)	(3.21)		(1.94)
MacroFP	0.301*	-0.0478	0.113*	-0.121	-0.140
	(2.00)	(-0.44)	(2.17)	(-1.76)	(-1.05)
TA	-0.00968	-0.00463	-0.00101	-0.00168	0.00557
	(-1.66)	(-1.15)	(-0.71)	(-1.07)	(1.12)
LN	0.0540	0.0238*	0.00238	-0.00142	-0.0386
	(1.89)	(2.08)	(0.61)	(-0.23)	(-1.47)
GVT	0.00841	0.0408	-0.0188*	-0.0248	-0.0152
	(0.36)	(1.29)	(-1.98)	(-1.63)	(-0.70)
CRI	-11.62*	-2.462	-1.410*	2.182	9.515*
	(-2.28)	(-1.63)	(-2.30)	(1.91)	(2.02)
CONC	-24.48	-19.24	29.51*	-11.79	37.92
	(-1.02)	(-0.76)	(2.42)	(-0.82)	(1.97)
GCAP	-0.282*	-0.103*	-0.0134	0.0129	0.228*
	(-2.35)	(-2.48)	(-0.80)	(0.42)	(2.06)
INF	-0.0608	-0.0832	0.109**	0.0400	0.115**
	(-1.17)	(-1.39)	(2.87)	(1.08)	(2.62)
R	0.125**	0.109*	0.0214	0.0382	-0.0867*
	(2.66)	(2.29)	(1.01)	(1.37)	(-2.37)
CRR	-0.846	-0.482	0.360	-0.0554	1.050*
	(-1.55)	(-1.00)	(1.80)	(-0.19)	(2.27)
Constant	136.4*	42.45	-8.787	4.319	-122.4*
	(2.34)	(1.41)	(-0.78)	(0.24)	(-2.33)
N	232	232	232	232	232
R^2	0.3829	0.4931	0.4384	0.3944	0.3453
Ramsey Test	0.0000	0.0000	0.1946	0.0081	0.0000

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

Table 7.12 OLS results for domestic firms with MacroFPS variable (1992-2009)

	(1) BTP	(2) NIM	(3) NII	(4) OV	(5) LLP
EQ	-0.000123	0.126	0.00375	-0.00122	0.0291
	(-0.00)	(1.30)	(0.19)	(-0.06)	(0.89)
NEA	0.00404	0.100	-0.0280	0.189***	-0.0828
	(0.05)	(1.11)	(-0.89)	(4.07)	(-1.07)
CSTF	0.00167	0.230*	-0.0237	0.0426	0.0499
	(0.03)	(2.50)	(-0.99)	(1.51)	(1.12)
OV	-0.672*	0.438*	0.454**		0.517
	(-2.25)	(2.25)	(3.13)		(1.92)
MacroFPS	1.918	-5.396	0.195	8.682	-1.168
	(0.15)	(-0.53)	(0.03)	(1.11)	(-0.12)
TA	-0.00743	-0.00453	-0.000113	-0.00343	0.00454
	(-1.33)	(-1.14)	(-0.07)	(-1.90)	(0.96)
LN	0.0475	0.0238*	-0.000201	0.00321	-0.0356
	(1.72)	(2.12)	(-0.05)	(0.48)	(-1.41)
GVT	0.00804	0.0416	-0.0188*	-0.0260	-0.0150
	(0.36)	(1.32)	(-2.03)	(-1.69)	(-0.71)
CRI	-10.61*	-2.445	-1.010	1.444	9.053*
	(-2.13)	(-1.63)	(-1.68)	(1.24)	(1.98)
CONC	-18.09	-27.05	31.22*	-1.769	34.57
	(-0.59)	(-0.77)	(2.08)	(-0.09)	(1.38)
GCAP	-0.231*	-0.100*	0.00726	-0.0288	0.204
	(-1.98)	(-2.43)	(0.41)	(-0.90)	(1.94)
INF	-0.0568	-0.102	0.109*	0.0715	0.112
	(-0.81)	(-1.22)	(2.42)	(1.37)	(1.89)
R	0.0953*	0.116*	0.0104	0.0451	-0.0726*
	(2.18)	(2.19)	(0.49)	(1.59)	(-2.32)
CRR	-0.696	-0.468	0.421*	-0.188	0.982*
	(-1.26)	(-1.00)	(2.12)	(-0.67)	(2.17)
Constant	118.0*	45.31	-15.76	11.91	-113.8*
	(2.21)	(1.42)	(-1.38)	(0.65)	(-2.38)
N	232	232	232	232	232
R^2	0.3730	0.4935	0.4320	0.3944	0.3422
Ramsey Test	0.0000	0.0000	0.0566	0.0216	0.0000

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

An alternative specification of bank performance models is to specify the variables in first differences. This implies that all variables in the models will be in form of the changes from their previous year values. Thus following Claessens et al. (2001), we re-specify (5) in first differences

$$\Delta P'_{it} = c + \beta_1 \Delta MacroFP_t + \beta_2 \Delta BS'_{it} + \Delta X_t + \varepsilon_{it} \quad (6)$$

Where Δ denotes first differences, and all variables are as previously defined.

Table 7.13 shows the OLS results for first difference models of bank performance on domestic firms. A key consequence of differencing is the loss of observation and therefore loss of degrees of freedom of the estimations. The R^2 values indicate that the explanatory variables explain 28-38% of variations in each of the models. There is strong evidence of misspecification in all five models .Changes in NEA also show a positive association with Overheads, as in the case of the specifications in levels. However, our variable of interest, ΔMacroFP is statistically insignificant in all five models in Table 7.13. As in the previous specifications, we compare the values with the models based on foreign presence measures based on the sample. From Table 7.14 there is evidence of positive association between ΔMacroFP and ΔOV. Thus the results reported on Table 7.13 and Table 7.14 also shows that different measures of foreign presence could produce different results, as the foreign presence measure based on the population of firms, ΔMacroFP , was insignificant in all models, while the measure based on the sample, ΔMacroFPS was significant in change in Overheads model (4).

However, the specifications based on the entire sample of foreign and domestic banks (Appendix 7.2, Table A3) show that ΔMacroFP is positively related to ΔBTP and negatively related to ΔLLP. This implies that there is evidence that foreign presence is negatively associated with risks in the Nigerian banking industry. There is also no evidence of changes in foreign equity participation with changes in bank performance, as indicated by estimates of MicroFP reported in Appendix 7.1, Table A4.

Table 7.13 OLS results for domestic firms with ΔMacroFP variable – first differences (1992-2009)

	(1) ΔBTP	(2) ΔNIM	(3) ΔNII	(4) ΔOV	(5) ΔLLP
ΔEQ	-0.00738	0.0883***	-0.00901	0.0220	0.0376
	(-0.13)	(3.64)	(-0.63)	(0.66)	(0.84)
ΔNEA	0.115	0.169	-0.0361	0.211*	-0.186
	(0.85)	(1.40)	(-1.07)	(2.38)	(-1.65)
ΔCSTF	-0.107	-0.00668	-0.00655	0.0498	0.127*
	(-1.51)	(-0.14)	(-0.33)	(1.02)	(2.19)
ΔOV	-0.801	0.408	0.367***		0.626
	(-1.97)	(1.86)	(6.06)		(1.78)
ΔMacroFP	0.224	0.0312	0.0787	0.0168	-0.0962
	(1.94)	(0.43)	(1.83)	(0.29)	(-0.95)
ΔTA	0.0137	0.00225	-0.0000365	-0.00589**	-0.0121
	(1.56)	(0.86)	(-0.03)	(-2.63)	(-1.56)
ΔLN	0.00624	0.00255	-0.00425	0.00427	-0.0113
	(0.31)	(0.40)	(-1.56)	(1.00)	(-0.64)
CRI	0.559	1.348	-0.289	1.838	0.674
	(0.17)	(0.85)	(-0.33)	(1.70)	(0.25)
ΔCONC	-18.01	-14.05	26.34*	5.638	49.98
	(-0.50)	(-0.52)	(2.19)	(0.29)	(1.72)
ΔGCAP	0.0255	0.0190	-0.00374	0.0723	0.00122
	(0.22)	(0.34)	(-0.11)	(1.82)	(0.01)
ΔINF	-0.0663	-0.0429	0.0600**	0.0677	0.0965***
	(-1.90)	(-1.21)	(2.91)	(1.87)	(4.06)
ΔR	-0.00859	-0.00877	0.0238*	-0.00358	0.00421
	(-0.31)	(-0.39)	(2.00)	(-0.18)	(0.19)
ΔCRR	-0.271	-0.0392	-0.105	-0.135	0.0957
	(-0.95)	(-0.19)	(-0.91)	(-0.73)	(0.40)
Constant	-1.143	-1.346	0.698	-1.977	0.498
	(-0.36)	(-0.82)	(0.69)	(-1.74)	(0.19)
N	180	180	180	180	180
R^2	0.3479	0.2879	0.3872	0.3031	0.3577
Ramsey Test	0.0000	0.0000	0.0156	0.0000	0.0000

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

Table 7.14 OLS results for domestic firms with ΔMacroFPS variable – first differences (1992-2009)

	(1) ΔBTP	(2) ΔNIM	(3) ΔNII	(4) ΔOV	(5) ΔLLP
ΔEQ	-0.00900	0.0847***	-0.00778	0.0282	0.0394
	(-0.16)	(3.49)	(-0.53)	(0.90)	(0.88)
ΔNEA	0.106	0.153	-0.0322	0.228*	-0.177
	(0.82)	(1.33)	(-0.94)	(2.58)	(-1.64)
ΔCSTF	-0.107	-0.0129	-0.00354	0.0603	0.130*
	(-1.52)	(-0.26)	(-0.17)	(1.33)	(2.22)
ΔOV	-0.782	0.440*	0.359***		0.608
	(-1.88)	(2.10)	(6.17)		(1.67)
ΔMacroFPS	-3.773	-7.734	2.460	15.85**	3.891
	(-0.45)	(-1.06)	(0.70)	(2.64)	(0.69)
ΔTA	0.0107	0.00144	-0.000853	-0.00482*	-0.0107
	(1.32)	(0.58)	(-0.65)	(-2.24)	(-1.47)
ΔLN	0.00985	0.00343	-0.00318	0.00340	-0.0130
	(0.50)	(0.56)	(-1.21)	(0.84)	(-0.75)
CRI	-2.088	-0.0911	-0.657	3.926***	2.148
	(-0.66)	(-0.05)	(-0.68)	(3.37)	(0.81)
ΔCONC	-32.64	-29.71	28.36	34.69	60.55
	(-0.83)	(-0.94)	(1.91)	(1.46)	(1.94)
ΔGCAP	-0.0631	-0.0346	-0.0132	0.154***	0.0522
	(-0.57)	(-0.53)	(-0.35)	(3.43)	(0.55)
ΔINF	-0.0758	-0.0622	0.0661**	0.103**	0.106***
	(-1.61)	(-1.43)	(3.24)	(2.82)	(3.42)
ΔR	0.00822	0.00960	0.0213	-0.0380	-0.00806
	(0.23)	(0.31)	(1.57)	(-1.69)	(-0.32)
ΔCRR	-0.155	-0.110	-0.0186	0.0761	0.0733
	(-0.60)	(-0.55)	(-0.16)	(0.48)	(0.37)
Constant	1.653	0.265	1.039	-4.383***	-1.088
	(0.53)	(0.14)	(0.94)	(-3.53)	(-0.42)
N	180	180	180	180	180
R^2	0.3418	0.2941	0.3809	0.3481	0.3568
Ramsey Test	0.0000	0.0000	0.0241	0.0000	0.0000

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

7.2.1 Panel data models: Banks

We extend equation (5), to account for unobserved heterogeneity that may bias the OLS estimates reported in previous tables. As in the case of manufacturing firms' estimations, we employ Fixed effects approach of panel data modeling, as the Hausman test also confirms the adequacy of the model in comparison to the alternative model, Random effects. Thus we re-specify (5) as a Fixed effects model:

$$P'_{it} = \beta_1 + \sum_{i=2}^{k} \beta_i X'_{it} + \sum_{1}^{n} \mu_i D_i + \delta_t + \varepsilon_{it} \quad (6)$$

Equation (6) relates bank performance variables P'_{it} to a vector of explanatory variables X' defined in Table 7.10; μ_i which accounts for unobserved bank-specific effects; D_i is a dummy variable for each individual bank in the sample, δ_t accounts for time-specific effects, while ε_{it} is the stochastic error term. The Fixed effects model (6) assumes that the μ_i is correlated with ε_{it}.

Table 7.15 shows the estimates of the fixed effects model of the effect of foreign presence on domestic firms. The overall R^2 of the models are lower than the equivalent using OLS estimates in Table 7.11. For example, the R^2 for the LLP model show that only about 29% of the variations in the explanatory variable can be explained by the model. However, in terms of the percentage of variation accounted by bank-specific heterogeneity, NIM, NII, and OV models show values above 60%. Thus this implies that panel estimates are more appropriate for modeling performance of Nigerian banks. Unlike the OLS estimates, key bank specific variables such as NEA, CSTF, and OV are statistically significant in most models. As expected, the measure of overheads OV is negatively associated with profitability measures: BTP, NIM, and NII. Also, the crises dummy CRI, is negative and statistically significant to measures of profitability, and positively related to measures of costs (OV) and risks (LLP).

However, the main variable in focus, MacroFP, is insignificant in all five models reported in Table 7.15. This implies that after controlling for bank-specific effects, foreign presence shows no significant effect on the performance of Nigerian banks. This is also true of the alternative specification on Table 7.16, using the foreign presence measure based on the sample, as no statistically significant estimates were obtained. In addition, alternative specifications (Appendix 7.1, table A5 and A6) based on all firms and the effect of foreign equity participation also has insignificant coefficients.

As in the case of the OLS models, we also run similar regressions using the first differences. The results reported in Appendix 7.1 Table A7, show no evidence of foreign bank effect on domestic banks. However, specifications based on the entire sample of banks show evidence of positive association between changes in foreign presence and changes in bank profits (BTP), and negative relationship with risks (LLP).

Table 7.15 Fixed effects results for domestic firms with MacroFP variable (1992-2009

	(1) BTP	(2) NIM	(3) NII	(4) OV	(5) LLP
EQ	-0.00775	0.0649	-0.00606	0.00313	0.0420
	(-0.16)	(1.83)	(-0.35)	(0.13)	(1.06)
NEA	-0.0123	0.185**	-0.0767*	0.254***	-0.0900
	(-0.15)	(2.94)	(-2.47)	(6.44)	(-1.28)
CSTF	-0.0133	0.107**	0.00128	0.0302	0.0833
	(-0.25)	(2.71)	(0.07)	(1.10)	(1.89)
OV	-0.633***	0.446***	0.313***		0.428***
	(-4.27)	(4.03)	(5.75)		(3.47)
MacroFP	0.181	0.0131	0.0890	-0.115	-0.0531
	(1.14)	(0.11)	(1.54)	(-1.41)	(-0.40)
TA	-0.00360	-0.00275	-0.00209	-0.00253	0.0000756
	(-0.53)	(-0.54)	(-0.83)	(-0.71)	(0.01)
LN	0.0518**	0.0169	0.00450	-0.00214	-0.0379*
	(2.66)	(1.16)	(0.63)	(-0.21)	(-2.34)
GVT	0.0896	0.316***	-0.0396	0.0143	-0.0482
	(1.59)	(7.53)	(-1.92)	(0.49)	(-1.03)
CRI	-11.08***	-1.563	-1.572*	2.441*	8.960***
	(-5.53)	(-1.05)	(-2.14)	(2.39)	(5.38)
CONC	-36.22	-25.95	20.95*	-12.89	39.86*
	(-1.51)	(-1.45)	(2.38)	(-1.04)	(2.00)
GCAP	-0.312***	-0.0716	-0.0201	0.0409	0.256***
	(-5.61)	(-1.72)	(-0.98)	(1.42)	(5.53)
INF	-0.0832	-0.0763	0.0822***	0.0186	0.118**
	(-1.56)	(-1.92)	(4.20)	(0.67)	(2.66)
R	0.110*	0.0725*	0.0346*	0.0269	-0.0619
	(2.39)	(2.12)	(2.06)	(1.13)	(-1.63)
CRR	-0.962*	-0.356	0.225	-0.0527	1.107**
	(-2.20)	(-1.09)	(1.40)	(-0.23)	(3.04)
Constant	155.9***	36.30	0.0288	-6.552	-136.7***
	(5.34)	(1.66)	(0.00)	(-0.43)	(-5.63)
N	232	232	232	232	232
R^2	0.3146	0.3177	0.3467	0.3116	0.2906
Rho	0.4792	0.7119	0.6652	0.6030	0.4923

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7.16 Fixed effects results for domestic firms with MacroFPS variable (1992-2009)

	(1) BTP	(2) NIM	(3) NII	(4) OV	(5) LLP
EQ	-0.00917	0.0646	-0.00652	0.00496	0.0426
	(-0.19)	(1.83)	(-0.37)	(0.20)	(1.08)
NEA	-0.0171	0.183**	-0.0771*	0.262***	-0.0864
	(-0.20)	(2.89)	(-2.45)	(6.71)	(-1.22)
CSTF	-0.0156	0.107**	0.000898	0.0344	0.0848
	(-0.29)	(2.69)	(0.05)	(1.26)	(1.92)
OV	-0.647***	0.449***	0.302***		0.427***
	(-4.32)	(4.03)	(5.47)		(3.44)
MacroFPS	-2.219	-2.125	1.259	10.95	3.312
	(-0.20)	(-0.26)	(0.31)	(1.92)	(0.36)
TA	-0.00161	-0.00238	-0.00137	-0.00483	-0.000806
	(-0.24)	(-0.47)	(-0.55)	(-1.39)	(-0.14)
LN	0.0468*	0.0161	0.00257	0.00313	-0.0358*
	(2.42)	(1.12)	(0.36)	(0.31)	(-2.24)
GVT	0.0924	0.316***	-0.0383	0.0121	-0.0491
	(1.64)	(7.54)	(-1.85)	(0.42)	(-1.05)
CRI	-10.37***	-1.452	-1.296	1.685	8.672***
	(-5.29)	(-1.00)	(-1.80)	(1.68)	(5.34)
CONC	-38.34	-28.76	23.09*	1.520	44.09
	(-1.35)	(-1.36)	(2.20)	(0.10)	(1.87)
GCAP	-0.278***	-0.0654	-0.00725	0.00106	0.241***
	(-5.22)	(-1.66)	(-0.37)	(0.04)	(5.48)
INF	-0.0943	-0.0838	0.0847***	0.0579	0.130*
	(-1.44)	(-1.72)	(3.51)	(1.73)	(2.40)
R	0.0949*	0.0726*	0.0260	0.0305	-0.0590
	(2.15)	(2.21)	(1.60)	(1.35)	(-1.61)
CRR	-0.879*	-0.340	0.254	-0.153	1.069**
	(-2.00)	(-1.04)	(1.57)	(-0.68)	(2.94)
Constant	147.3***	35.99	-4.599	-2.579	-134.6***
	(5.20)	(1.71)	(-0.44)	(-0.18)	(-5.74)
N	232	232	232	232	232
R^2	0.3021	0.3180	0.3382	0.3115	0.2861
Rho	0.4874	0.7109	0.6689	0.6068	0.4969

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In general, the effects of foreign bank presence on the performance of all banks are only significant in OLS estimates. In particular, we found evidence of positive and statistically significant coefficients for foreign presence on Before-tax profits (BTP) and Non-interest income (NII). Estimates using the alternative measure of foreign bank presence based the sample are statistically insignificant. However, after controlling for bank-specific effects in the models, we found no evidence of foreign bank effects on domestic firms. Models based on first differences also show no evidence of foreign bank effects on domestic banks, which is contrary to the results using the sample, which show significant positive association with changes in profits (ΔBTP) and negative relationship with risks (ΔLLP). We therefore

conclude that our data on Nigerian banks provide weak evidence of foreign bank effects on domestic banks

7.3 Discussion of results

The overall results obtained from the estimations show that FDI measured by a proxy for foreign presence is positive related to the productivity or performance of domestic firms and banks respectively. However, robust evidence of the positive association of foreign presence were found amongst were found amongst manufacturing firms. Panel data estimates show that foreign presence in manufacturing industries or sub-sectors leads to about 5% rise in output or about 7% rise in value added of domestic firms. However, in the case of banks, panel data estimates show no significant effect of foreign presence on domestic banks. But OLS estimates reported on Table 7.11 show evidence of positive effects of foreign presence on profits (BTP) and non-interest income (NII).

Interpretation of the results in this chapter should be made in recognition of the environment in which the analysis is based. Chapter 2 points out that unlike manufacturing firms where foreign firms dominate the industry, Nigerian banking industry is dominated by domestic banks. Similarly the manufacturing sector is completely open to foreign investment while the banking sector often imposes limits to foreign equity participation on Nigerian banks. A recent imposition of 20% limit was imposed on foreign equity participation in banks in 2007 (NDIC, 2008). This can explain the insignificance of foreign presence in the sector as Schoors and Van der Tol (2002) has shown that openness of sector enhances positive effects of foreign presence. Similarly, Sinani and Meyer (2004) show that productivity spillovers arise from majority owned foreign firms, albeit their focus on manufacturing firms rather than banks.

A different line of thought which can explain the differences in FDI effects in the two sectors is the "catching up" hypothesis attributed to Findley (1978). As pointed out in Chapter 5, the hypothesis is based on the assertion that sectors with large technological differences between foreign and domestic firms are better positioned to benefit from FDI spillovers. Thus as highlighted in Chapter 2, the manufacturing industry in Nigeria operates at a low technological level, in comparison to banks in the country. Therefore we expect MNCs in the industry to operate at a higher technology level as technology gaps are most likely to exist between domestic and foreign manufacturing firms. This is in contrast to the case in the banking sector, as domestic banks in Nigeria operate at a similar technological level similar to their foreign counterparts. Thus the robust positive and significant FDI

spillover effects obtained in our estimations and the absence in the banking sector confirm to the "catching up" hypothesis. Empirical studies that support the "catching up" hypothesis include Sjohlm (1999), Castellani and Zanfei (2003), and Peri and Urban (2006).

Another plausible reason for the lack of evidence of foreign bank presence effects on domestic banks is the due to the nature of bank performance models. Unlike the Cobb-Douglas model applied in the case of manufacturing firms, bank performance models do not explain variations in bank performance adequately. This is evident in the value of the R^2 in most bank performance estimations, which are all mostly below 0.5. Our results of weak evidence of foreign bank presence are similar to results obtained in literature. Wu et al. (2007), Poghosyan (2010), and Lin (2011) found no significant effects on foreign bank presence in their respective estimations.

An important finding in this study is that the alternative measures of foreign presence can yield different results. This finding was particularly exemplified in the estimations based on manufacturing firms where directly contrasting results were obtained. Specifically the foreign presence measure FP obtained from central bank census surveys show positive spillover coefficients while the measure based on foreign share of employment in the sample FPS show negative and significant coefficients on Output and Value added models. However, most studies in literature apply the variants of the latter variable which is deemed to show very misleading results. Thus are results confirm that it is of much importance to pay close attention to the measure of foreign presence employed for the investigation of FDI spillovers, as the simple reliance on an existing dataset collected for the purpose of production function estimation rather than industry or census data can lead to bias estimates as the measure of foreign presence is likely to be a random variable, subject to sampling error.

Chapter 8: Overall Conclusion

8.1 Introduction

This study has conducted a detailed enquiry into the impact of FDI on manufacturing firms and banks in Nigeria through econometric estimations of augmented Cobb-Douglas and Dealership models respectively. It has also explored the country specific characteristics of the Nigerian operating environment, as well as the sector-specific characteristics of its manufacturing sector and banking sector, in an attempt to provide explanations for the results obtained from the investigation. Overall, the analysis found strong evidence of positive FDI impact on manufacturing firms but not in the case of banks. We also threw light into the importance of employing an appropriate measure of foreign presence in estimating FDI effects in using firm level data.

This final chapter concludes the thesis by revisiting the research questions posed in Chapter 1, and providing final conclusions, implications and suggests directions for future research.

8.2 Revisiting the Research Questions

Question 1: Are there spillover effects from FDI to domestic firms in Nigerian manufacturing firms?

Two approaches towards the estimation of FDI effect on manufacturing data were followed in this study. Chapter 7 shows that both OLS and Fixed effects estimations were applied of augmented Cobb-Douglas models using output and value added as dependent variables. However, we lay more emphasis on the fixed effects models due to the ability of the estimation technique to control for firm-specific heterogeneity which can potentially bias OLS estimates in a models with both cross-sectional and time dimensions. Our results on both Output and Value added models show robust evidence of positive and significant spillovers of FDI on foreign presence. Specifically, a unit increase in foreign presence leads to 4.8% rise in output or and 7.6% rise in value added of domestic firms.

Question 2: Does foreign presence in Nigerian banking industry affect domestic bank performance?

In the case of estimating foreign presence effect on bank performance, this study employs variants of augmented dealership models using both OLS and Fixed effects models. Five indicators of bank performance which measure profitability, income, and risks were employed. Specifically we investigate the effect of foreign presence on Before-tax profits (BTP), Net interest margins (NIM), Non-interest income, Overheads (OV), and Loan loss provisions (LLP). As in the case of estimations based on manufacturing firms, we lay emphasis on fixed effects regressions due to its desirable property of controlling for bank-specific heterogeneity. In the case our bank performance investigation, we also estimate models based on the same dependent variables, but in first differences. Our results show no evidence of FDI effects on domestic bank performance, as coefficients of foreign presence appear insignificant in both models based on levels and those based on first differences. Thus we found no evidence of foreign bank presence effects domestic banks.

Question 3: How does the approach taken towards the computation of foreign presence measure affect spillover estimates?

This thesis has shown that the approach towards the computation of foreign presence in terms of the sampling procedure and data quality can affect spillover estimates. Two alternative measures of foreign presence was employed our analysis on both manufacturing firms and banks. On manufacturing firm analysis, we employ foreign presence measure based on the census of manufacturing firms in Nigeria, provided by the Central bank of Nigeria (CBN). Alternatively, we compute foreign presence using the dominant approach in literature, which measures the share of foreign employment in each sector. Graphical representation of these two variables in Chapter 6 show remarkable difference in these two variables, terms of their respective sectoral and year distributions. These implies that the measure based on census data from the CBN and the measure based on share of foreign employment computed from the sample are two different variables, with the latter being a random variable, subject to sample error.

To confirm these observations, we also provide alternative specifications using the measure of foreign presence based on the sample in both models based on manufacturing data and banking data In Chapter 7. Results based on manufacturing firms data show remarkable differences in coefficients of the alterative measures of foreign presence. In particular, while the measures based on census data from CBN show positive and significant coefficients, the alternative measure computed from the sample show

negative and significant coefficients. We therefore link these differences to the nature of the sample used for the estimation, highlighting how the representativeness of the sample, the occurrence of missing observations, and data inconsistencies can bias the foreign presence measure. Thus we conclude that these factors can affect spillover estimates which can result in bias or misleading results.

8.3 Final conclusion

This thesis has contributed to FDI literature, by providing evidence in support of the notion that FDI generates positive externalities on domestic firms. The enquiry for the impact was based on manufacturing firms and banks in Nigeria, a country which stand as a top recipient of FDI in Africa. The study has provided a detailed examination of FDI by highlighting its trends in the globe, developing countries, Africa, and Nigeria. It points out that despite the fact that developed countries are the major drivers of FDI flows, African countries have been experiencing a substantial rise in flows for the past decade, with Nigeria having 108% rise in 2005. This study also highlights global policies of FDI, pointing out that the recent emergence of protectionism after decades of liberalization policies. In contrary, outlines of policies that affect FDI in Nigeria shown in this study indicate that the country moved from decades of various degrees of protectionism, to an economy generally open to FDI. However, restrictions to foreign equity participation are evident at in the banking sector.

In order to understand the nature of the environment in which is study is based, this study has extensively examined the nature of Nigerian operating environment, with insights into the dynamics of both manufacturing and banking sectors. This investigation examines the contrast in the two sectors with emphasis on broad indicators such as percentage shares in GDP, capacity utilization in the case of manufacturing firms, and number of branches in the case of banks. Comparisons of the Nigerian manufacturing and banking sectors show that while the former is mildly regulated, with light technology industries; the banking sector is highly regulated, operating at modest technology levels. In addition, the manufacturing sector is completely open to FDI, while the banking sector alternates between liberalization and restriction with a recent imposition of limits to foreign equity participation in 2007.

Detailed review of theories of FDI in this study provide the underpinnings of spillover mechanisms, pointing out its origins in the neo-classical trade theories and the subsequent incorporation of industrial organization theories; identifying particular contributions by Mundell (1957), Hymer (1960), Kindleberger (1969), Buckley and Casson (1976), and Dunning (1979). The mechanism of FDI spillovers is

examined, pointing out the different channels in which spillovers are known to occur. The channels of spillover occurrence such as demonstration, workers' mobility and competition are applicable to both manufacturing firms and banks.

Extensive review of empirical literature carried out in this study show the directions of the investigation of FDI spillover literature in manufacturing firms, which are categorized as studies based on spillover occurrence, and studies that show that spillovers are determined by domestic firm as well as MNC characteristics. However, in the case of banking sector studies the limited literature are quite similar with the effect of foreign presence on measures of bank performance with augmented dealership models. An important contribution of this thesis includes a detailed critique of previous studies, pointing out the lack of attention towards the importance of appropriate computation of measures of foreign presence, especially in terms of its sampling procedure and quality of data employed.

A detailed data description was provided in this study the showing the industry and regional distributions of the NMES data, and the distribution of the measures of bank performance obtained from BankScope. Particular attention was paid on the distribution of measures of foreign presence for manufacturing firms and banks, sourced from the census/population data from Central Bank of Nigeria (CBN) and the Nigerian Deposit Insurance Corporation (NDIC) respectively. To illustrate the differences in alternative measures of foreign presence, we compare the foreign presence measure obtained from CBN with the alternative proxy based on foreign share of employment computed from the NMES sample. The histograms reported in Chapter 6 show significant differences in these two variables, implying that the sample based measure could provide misleading estimations.

The methodology for identifying the presence of FDI effects on both manufacturing firms and banks is the econometric estimations of foreign presence measures on productivity/performance models. Using augmented Cobb-Douglas models for manufacturing data and dealership models for bank data, OLS and Fixed effects estimates of foreign presence were obtained. The Fixed effects estimations which control for firm-specific and bank specific effects show strong evidence of positive effects of FDI in manufacturing sector, and no effect on the banking sector. We interpret these results as evidence in support of "catching-up" hypothesis which imply that firms in sectors with high technology gaps are more likely to benefit from FDI as in the case of Nigerian banking sector.

In conclusion, the investigation of FDI effects on Nigerian manufacturing and banking sectors in this study has provided evidence of positive productivity effects on manufacturing, and also evidence of its

absence in banking sector. In addition it recommends that attention should be focused on the computation of measures of foreign presence to avoid misleading estimates.

8.4 Policy Implications

The results of this thesis show evidence of beneficial effects of FDI on the manufacturing sector of Nigeria and its absence on banking sector. Chapter 2 which describes these two sectors identify that while the manufacturing sector is completely open to FDI and mildly regulated, the banking sector is highly regulated with reoccurring limits placed on foreign participation. Reflecting on these two points, one can infer that the lack of positive effects of FDI could be linked with their respective policies both in terms of government regulation and orientation to FDI.

Nigerian government claims to be completely open to FDI, but recurring policies aimed at restriction are still evident in some sectors. The Nigeria banking sector is a particular sector where the policy directives and operational guidelines given by the regulatory body (CBN) may not align with the Federal government's orientation towards FDI. Thus while sectors such as manufacturing aligns with the Federal governments openness policy towards FDI, the CBN has autonomous powers to give guidelines for bank operation that go contrary to government policies. It is therefore not surprising that despite the openness of other sector to FDI since 1995, the banking industry recently placed limits of 20% on foreign equity participation to restrict foreign dominance of Nigerian banks in periods of boom.

The Nigerian banking industry, being the most regulated institution in the country, makes it less desirable for foreign investors. Frequent changes in minimum paid-up capita requirements and controls on loan portfolio on banks may not attract potential foreign investors. Thus the absence of these regulations in the manufacturing sector could explain the positive FDI spillovers evident in the industry. However, despite the ability of the manufacturing industry to reap the benefits of foreign presence, its FDI potentials have not been fully exploited. Institutional challenges and harsh operating conditions still undermine FDI flows to the sector. Inadequate infrastructure in the form of power outages and poor transportation; coupled with the incidence of corruption and lack of transparency diminish its locational advantages. Thus in order to reap the full benefits of FDI, the government should urgently tackle these problems in order to promote market-seeking FDI rather than resource-seeking FDI, which has been dominant in the country due to its oil reserves.

8.5 Limitations and directions for further research

Despite the important contributions made in this study, particularly in terms of producing adequate measurements of foreign presence, issues of the reliability of our estimates may be a matter of concern. Similar to most investigations based on developing countries, and Africa in particular, availability, reliability, and representativeness of data have always been questionable. In the case of the data employed in this present study, questions about its reliability also arise. The NMES data, based on a survey of Nigerian manufacturing firms are reliable to the extent that the numerical values obtained from the questionnaires reflect the true values. However this could be a strong assumption as there is no sufficient evidence to verify their accuracy, as many Nigerian firms are known to falsify details of their sales, output, capital, employment, etc. to avoid appropriate taxation of their enterprise. Also some smaller firms may not be keeping appropriate records that would enable the valuation of their firms. In the case of banking data, the BankScope data set used for the bank models provide indictors of bank performance that sometimes conflict with the Nigerian regulatory bodies such as the CBN and NDIC. Thus our estimations are based on the assumption that these data reflect were accurately measured.

Another limitation of this study is that the time dimension of our data may not capture the actual trend of productivity measures in Nigerian manufacturing. Our results are based on 6 year observations which might not truly reflect the overall productivity of Nigerian firms. Also, a significant loss of observations (82 firms) between 2000 and 2001 could affect our estimates of our regressions. In case of banks, despite the relatively large time frame (1992-2009), the percentage of the sample available in BankScope to the population range from 0.8% in 1992 to 96% in 2005. This could also lead to less efficient estimates. Similarly, as the methodological approach of estimating the impact of FDI on domestic firms involve running regression on only domestic firms; this significantly reduces observations and therefore degrees of freedom in our models. This is of particular concern in estimations based on banking data, as it results in basing our judgment on foreign presence effect on 232 observations in the case of models in levels, and 180 observations in the case of models in first differences. Thus our conclusions about FDI impact on the banking sector are base on limited number of observations.

Further research on FDI effect on Nigerian sectors should be aimed at improving the data quality for the analysis especially in terms of coverage or representativeness. Also, as indicated in this study, analysis of FDI impact on firms are applicable to both industrial and services sectors. Thus it would be

worthwhile to estimate FDI effects in other sectors in Nigeria with considerable foreign presence such as the oil sector, and telecommunications sector. In terms of estimation of FDI spillovers in general, further research could lay emphasis on the approaches towards the computation of foreign presence variable, as its importance has been pointed out in this thesis.

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Appendices

Appendix 5.1

Table A1: Tabulated list of articles reviewed

Journal Article	Sampling Methodology
Kokko, A., Tansini, R., & Zejan, M. C. (1996). Local Technological Capability and Productivity Spillovers from FDI in the Uruguayan Manufacturing Sector. *Journal of Development Studies, 32 4*, 602-611.	**What is the source of the data?** Two sources: Plant level survey collected by the Department of Economics at the University of the Republic of Uruguay. Unpublished worksheets collected for the Uruguayan Economic Census of 1988 by the national institute of Statistics in Montevideo. **Data coverage** Cover all plants belonging to private-locally owned manufacturing firms with more than 99 employees **How representative is the sample?** Represents 60% of total output; 47% of total employment; and 57% of the local sales in Uruguayan manufacturing sector in 1988 **Form of data** Cross-section of 289 plants **What are the criteria for excluding observations?** Excluded 8 observations because of missing or uncertain data for some variables. Excluded plants operating in 4-digit industries without foreign presence **Final sample used** 159 plants in 1998 **Effect of consistency of panel on methodology:** Not applicable
Sjoeholm, F. (1999). Technology Gap, Competition and Spillovers from Direct Foreign Investment: Evidence from Establishment Data. *Journal of Development Studies, 36*(1), 53-73.	**What is the source of the data**? Data was obtained from the yearly industrial survey conducted by Central Bureau of Statistics **Data coverage:** All Indonesian firms with more than 20 employees **How representative is the sample**? Not mentioned. **What are the criteria for excluding observations?** Observations that were not available for both 1980 and 1990 were removed from growth estimations **Form of data:** Data for two years was available 1980 and 1990. **Final Sample used:** Consists of 8,086 establishments in 1980, and 16,382 establishments in 1991.892 domestic establishments available for both 1980 and 1990 were used for growth estimations **Effect of consistency of panel on methodology:** Inconsistency of panel limited establishments used for growth estimations to 2,892. Establishments which left the industry after 1980 and establishments which entered the industry after 1980 were excluded from the sample.
Aitken, B. J., & Harrison, A. E. (1999). Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela. *American Economic Review*, 89(3), 605-618.	**What is the source of the data**? Annual census of industrial plants conducted by National Statistics Bureau of Venezuela. Data appeared without plant identifiers **Data coverage:** Covers all plants in the formal sector with more than 50 workers **How representative is the sample**? Not mentioned **What are the criteria for excluding observations?** 15,569 observations that could not be linked across years were excluded **Form of data:** Unbalanced panel of 6,044 plants between 1976 and 1989. Number of firms surveyed ranged from 3,955 in 1982 to 6,044 in 1978 **Final Sample used:** 43,010 observations **Effect of consistency of panel on methodology:** The authors created a program to link

	the plant identifiers. However, as many as 15,569 observations could not be linked and therefore deleted from the sample. The paper acknowledged the importance of identifying firms across years but did not specify the implication of unidentified observations on the spillover variable.
Djankov, S., & Hoekman, B. (2000). Foreign Investment and Productivity Growth in Czech Enterprises. *The World Bank Economic Review, 14*(1), 49-64.	**What is the source of the data**? Compiled information from surveys conducted by the Czech Statistical Office **Data coverage:** Covers 513 large firms quoted on the Prague stock exchange whose shares traded not less than 4 times in a year. **How representative is the sample**? Noted that selection bias existed as privately owned firms were not included in the sample. However the authors noted that the high percentage of foreign firms in the sample represents the Czech industry ownership structure. **What are the criteria for excluding observations?** Not mentioned **Form of data:** Panel data over the period 1992-1999. **Final Sample used:** 513 firms of which 91were joint ventures, 82 had majority foreign equity, and 340 were domestic firms. **Effect of consistency of panel on methodology**: Not mentioned
Aslanoglu, E. (2000). Spillover Effects of Foreign Direct Investments on Turkish Manufacturing Industry. *Journal of International Development, 12*(8), 1111-1130.	**What is the source of the data?** Regular survey of Istanbul Chamber of Commerce (ISO) **Data coverage** Cover the largest 500 industrial firms **How representative is the sample?** Represents 50% of the industrial value added in Turkey **Form of data** Cross-section data over the period 1993-1998 **What are the criteria for excluding observations?** Not mentioned **Final sample used** 500 firms in 28 sectors in 1993. Some variables made use of 1988 data **Effect of consistency of panel on methodology:** Not applicable. Made use of cross- section data
Konings, J. (2001). The effects of foreign direct investment on domestic firms Evidence from firm-level panel data in emerging economies. *Economics of Transition, 9*(3), 619-634.	**What is the source of the data?** Annual accounts published by: Creditreform Bulgaria OOD **Data coverage** Company accounts of all manufacturing firms satisfying at least one of the following criteria: 100 or more employees, and total assets and operating revenues exceeding 16 million and 8 million respectively **How representative is the sample?** Not specified **Form of data** Unbalanced panel of over 5,000 firms in Bulgaria, Romania, and Poland for the years 1993-1997 **What are the criteria for excluding observations?** Excluded firms with missing observations on some of the input factors needed in the estimation **Final sample used** 2,321 firms in Bulgaria between 1993 and 1997; 3,844 firms in Romania between 1994 and 1997; 262 firms in Poland between 1993 and 1997 **Effect of consistency of panel on methodology:** Not mentioned
Feinberg, S. E., & Majumdar, S. K. (2001). Technology Spillovers from Foreign Direct Investment in the Indian Pharmaceutical Industry. *Journal of International Business Studies, 32*(3), 421-438.	**What is the source of the data?** Unpublished data on domestic and foreign corporations complied by the Reserve bank of India (RBI) **Data coverage** Covers 1700 to 1800 large publicly traded companies **How representative is the sample?** Represents 85% of the paid-up capital of 3-digit industries **Form of data**

	1361 firm-year observations on 141 firms over the period 1971- 1994 **What are the criteria for excluding observations?** Small firms and government owned firms were excluded from the survey. Firms with less than 3 consecutive year observations were removed. As a result of the creation of R&D stock variables, non contiguous observations were removed from the sample. Due to unavailability of UNIDO data prior to 1980, data from 1976 to 1979 were excluded from the regressions **Final sample used** 95 firms/832 firm year observations over the period 1980-1994 **Effect of consistency of panel on methodology:** Due to irregularities in the data, 4 firms/150 firm year observations that only appeared for the years 1971-1975 were excluded. As a result, the sample began in 1976. Due to sporadic coverage of small firms, smaller firms that did not submit data are mistaken as "entries" and "exits" in and out of the sample. As a standard, only firms observed at least 3 consecutive times were selected. This resulted in the elimination of 23 firms/46 firm year observations which were only observed twice in the dataset.
Dimelis, S., & Louri, H. (2002). Foreign Ownership and Production Efficiency: A Quantile Regression Analysis. *Oxford Economic Papers, 54 3*, 449-469.	**What is the source of the data**? Data derived from the ICAP directory. ICAP collects data on all Plc. and Ltd. who publish their annual accounts on the press **Data coverage:** ICAP collects data on all Plc. and Ltd. who publish their annual accounts on the press. The firms included are large-sized firms. **How representative is the sample**? The sample produced 85% of manufacturing sales in 1997 **What are the criteria for excluding observations?** Not mentioned **Form of data:** Cross section of 4,056 firms in 1997. 3,840 are domestic and 216 are foreign. **Final Sample used:** 4,056 firms were used **Effect of consistency of panel on methodology:** Not mentioned
Sembenelli, A., & Siotis, G. (2002). Foreign Direct Investment, Competitive Pressure and Spillovers. An Empirical Analysis on Spanish firm level Data Centro Studi Luca D'Angliano.	**What is the source of the data?** Database Central de Balances, gathered by the Bank of Spain **Data coverage** Covers large firms with 100 or more employees and a shorter version of smaller firms **How representative is the sample?** Not specified **Form of data** Above 91,000 observations for the time period 1983-1996 **What are the criteria for excluding observations?** Eliminated observations/firms with: Questionable values; reporting non-positive values for labour input, gross output, and net fixed assets; a value greater or equal to 1 or less than or equal to 1; different 3 digit affiliation during the sample period. **Final sample used** Unbalanced panel of 29,318 observations over the period 1983-1996 **Effect of consistency of panel on methodology:** Due t the requirements of the panel data technique applied (GMM), only firms with a minimum of 4 consecutive observations were applied.
Barrios, S., & Strobl, E. (2002). Foreign Direct Investment and Productivity Spillovers: Evidence from the Spanish Experience. *Weltwirtschaftliches Archiv, 138*(3), 459-481.	**What is the source of the data?** "Encuesta Sobre Estrategias Empresariate" from the Ministerio de Industria y Energia (MINER, Madrid) and the Fundacion Empresa publica (Madrid) **Data coverage** Covers all manufacturing companies with 200 e+mployees or more; and a representative sample of manufacturing firms with less than 200 employees **How representative is the sample?** Represents 22% of total Spanish employment in the manufacturing industry **Form of data** Annual panel of approximately 2,100 Spanish manufacturing firms for 1990-1998. Dataset does not allow one to distinguish btw exits and random non-response. **What are the criteria for excluding observations?** Not mentioned **Final sample used** Not mentioned **Effect of consistency of panel on methodology:**

	Not mentioned
Keller, W., & Yeaple, S. R. (2003). Multinational Enterprises, International Trade, and Productivity growth: Firm level Evidence from the United States. National Bureau of Economic Research.	**What is the source of the data?** Standard and Poor's *Compustat* database **Data coverage** *Compustat* covers only publicly traded companies **How representative is the sample?** Represents about 58% and 70% of U.S manufacturing employment and manufacturing R&D expenditures respectively **Form of data** 1,115 U.S. owned firms that were active between 1987-1996 **What are the criteria for excluding observations?** Removed foreign owned firms from the sample. Excluded firms form which any time series exhibited implausibly large year to year changes. Dropped firms that displayed large changes in inputs while output was flat, or vice versa. **Final sample used** 839 firms that reported output sand inputs, including R&D, and 1,115 firms that did not report R&D were included **Effect of consistency of panel on methodology:** The study made use of firms which had data on key variables for at least 2 consecutive years which is necessary for dynamic estimation framework.
Khawar, M. (2003). Productivity and foreign direct investment - evidence from Mexico. *Journal of Economic Studies, 30*(1), 66-76.	**What is the source of the data?** Raw dataset from Mexico Industrial Survey for the year 1990 **Data coverage** Not mentioned **How representative is the sample?** Not mentioned **Form of data** Cross section for 1990 **What are the criteria for excluding observations?** Not mentioned **Final sample used** 2,362 firms for the year 1990 **Effect of consistency of panel on methodology:** Not mentioned
Ayanwale, A. B., & Bamire, S. (2004). Direct Foreign Investment and Firm-level productivity in the Nigerian Agro-agro-allied sector. *Journal of Social Sciences, 9*(1), 29-36.	**What is the source of the data**? Publications of Nigeria Stock Exchange Commission and Central Bank of Nigeria (CBN) **Data coverage:** Covers agro/agro allied companies listed in the first tier market (firms with foreign component) and second tier (domestic owned firms) foreign exchange markets **How representative is the sample**? Not mentioned **What are the criteria for excluding observations?** Not mentioned **Form of data:** Data on 52 companies from 1987 to 1996 **Final Sample used:** 52 ago/agro allied companies **Effect of consistency of panel on methodology:** Not mentioned
Javorcik, B. S. (2004). Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers Through Backward Linkages. *American Economic Review, 94*, 605-627.	**What is the source of the data**? Based on annual survey of Lithuanian Statistical Office **Data coverage:** Extensive coverage of firms accounting for 85% of output in each sector. Panel could not be extended due to limited foreign presence before 1990. **How representative is the sample**? Data represents 85% of output across sectors included. **What are the criteria for excluding observations?** Deleted values with missing values, zero sales or employment, as well as observations that could not satisfy other basic error checks **Form of data:** Unbalanced panel over the period 1996-2000. 12% of the firms are foreign **Final Sample used:** Varies between 1,918 and 2,711 firms in a given year **Effect of consistency of panel on methodology**: Mentioned that the inconsistency of panel due to a firm not being surveyed in a given year was not accounted for.
Sinani, E., & Meyer, K. E. (2004). Spillovers of	**What is the source of the data**?

technology transfer from FDI: the case of Estonia. *Journal of Comparative Economics, 32*, 445-466.	Dataset obtained from Estonian Statistical Agency (ESA) **Data coverage:** Covers firms with more than 10 employees in a given year **How representative is the sample**? Sample covers 30% of the manufacturing employment in 1994. **What are the criteria for excluding observations?** Not mentioned **Form of data:** Unbalanced panel data over the period 1994-1999. Different years had different number of firms **Final Sample used:** Consists of 2250 observations over the period 1994-1999. **Effect of consistency of panel on methodology**: Not mentioned
Ruane, F., & Ugar, A. (2004). Foreign direct investment and productivity spillovers in irish manufacturing industry: evidence from plant level data. *International Journal of the Economics of Business, 11*(3), 53-66.	**What is the source of the data?** Irish Census of Industrial Production (CIP), conducted annually by the Central Statistics Office of Ireland **Data coverage** Covers all industrial local units with at least 2 or 3 persons engaged **How representative is the sample?** The only representative survey of plants in Ireland **Form of data** An average of 4,600 companies over the period 1991-1998. Each year has different number of firms in the panel (unbalanced). **What are the criteria for excluding observations?** Apparently used the whole sample without eliminating observations **Final sample used** Unbalanced panel of about 4,600 companies over the period 1991-1998 **Effect of consistency of panel on methodology:** Since the survey covers all firms in the industry, inconsistency was attributed to entry and exit of firms.
Takii, S. (2005). Productivity Spillovers and Characteristics of Foreign Multinational Plants in Indonesian Manufacturing 1990-1995. *Journal of Development Economics, 76 2*, 521-542.	**What is the source of the data**? Two datasets based on industrial surveys conducted by Indonesia's Bureau of Statistics. **Data coverage:** Survey covers plants with 20 or more workers **How representative is the sample**? Not mentioned **What are the criteria for excluding observations?** Outliers were eliminated. Plants that did not reply to surveys/census were omitted from dataset. In order to ensure a consistent industrial classification across plants, the sample was limited to 1990-1995. **Form of data:** Two datasets were available. One dataset contained cross section of information on plants for each year. The second dataset contained panel data from 1975 to the most recent available year **Final Sample used:** Not mentioned **Effect of consistency of panel on methodology:** Not mentioned
Dimelis, S. P. (2005). Spillovers from Foreign Direct Investment and Firm Growth: Technological, Financial and Market Structure Effects. *International Journal of the Economics of Business, 12*, 85-104.	**What is the source of the data?** Directory of the confederation of Greek Industries (ICAP) **Data coverage** All Plc and Ltd firms operating in Greece **How representative is the sample?** Not specified **Form of data** 2589 with complete information for 1995 and 1997. Cross section of two years **What are the criteria for excluding observations?** Not mentioned **Final sample used** 2589 firms with complete information for 1995 and 1997. **Effect of consistency of panel on methodology:** Not mentioned
Kugler, M. (2006). Spillovers from foreign direct investment: Within or between industries? *Journal of Development Economics, 80*(2), 444-477.	**What is the source of the data**? Based on annual surveys Colombia Manufacturing Census) conducted by the National Statistics bureau of Colombia and Central Bank data. **Data coverage:** Covers firms with more than 10 workers from 1974 to 1998. **How representative is the sample**? Sample represents 63% of the average share of workforce between 1974 and 1991, and 71% of the average share of the product **What are the criteria for excluding observations?** Not mentioned **Form of data:** Not mentioned

	Final Sample used: Not mentioned **Effect of consistency of panel on methodology:** Not mentioned
Gorg, H., Hijzen, A., & Murakozy, B. (2006/08). The productivity spillover potential of foreign owned firms: Firm-level evidence for Hungary. The University of Nottingham.	**What is the source of the data**? Officially reported balance sheet data **Data coverage:** Covers 20-30% of all manufacturing in Hungary **How representative is the sample**? The sample represents 90% sales and 98% exports of all manufacturing firms in Hungary **What are the criteria for excluding observations?** Not mentioned **Final Sample used:** Not mentioned **Form of data:** Panel data for the period 1995-2001 **Effect of consistency of panel on methodology:** Not mentioned
Peri, G., & Urban, D. (2006). Catching-Up to Foreign Technology? Evidence on the 'Veblen-Gerschenkron' Effect of Foreign Investments. *Regional Science and Urban Economics, 36 1*, 72-98.	**What is the source of the data**? Two datasets containing data on two different countries Italy and Germany were used. Data on Italian firms was sourced from the *Centro Studiluca d'Angliano* and merged with the AIDA database of Bureau van Dijk. Data on German firms was sourced from current releases of Bureau van Dijk **Data coverage:** A subset of German firms containing large firms with more than 100 employees. The coverage of Italian firms broadens over time, i.e. the early periods of the sample was broader than the later periods. **How representative is the sample**? Sample represents 2% of all manufacturing firms and 16% of manufacturing employment in Germany. Covers the whole universe of Italian firms, but smaller firms were under-represented **What are the criteria for excluding observations?** For Italian firms, observations 1992 and 1993 were excluded because of missing data. **Form of data:** Unbalanced panel of about 800 German manufacturing firms over the period 1993-1999. Unbalanced panel of Italian firms over three years: 1994, 1996 and 1998. **Final Sample used:** For Italian firms, the number of foreign firms across years ranged from 354 to 832, while the number of domestic firms was between 9,858 and 36,738. For German firms, number of foreign firms across sectors ranged from 203 to 226, while the number of domestic firms was between 556 and 653. **Effect of consistency of panel on methodology**: Not mentioned
Bwalya, S. M. (2006). Foreign direct investment and technology spillovers: Evidence from panel data analysis of manufacturing firms in Zambia. *Journal of Development Economics, 81*(2), 514-526.	**What is the source of the data**? Based on annual data on Zambian manufacturing collected by World Bank through Regional Programme on Enterprise Development (RPED). **Data coverage:** Covered 145 manufacturing firms. **How representative is the sample**? Not mentioned **What are the criteria for excluding observations?** Firms with missing key information were deleted **Form of data:** Panel data over the period 1993-1995 **Final Sample used:** Sample of 125 firms over the period 1993-1995 **Effect of consistency of panel on methodology**: Not mentioned
Marin, A., & Bell, M. (2006). Technology spillovers from Foreign Direct Investment (FDI): the active role of MNC subsidiaries in Argentina in the 1990s. *Journal of Development Studies, 42*, 678-697.	**What is the source of the data?** Innovation Survey in Argentina, 1992-1996 **Data coverage** Covers 50% of all industrial firms **How representative is the sample?** Sample accounts for 53% of total assets of industrial firms, 505 of total employment, and 61% of the total exports **Form of data** Cross section of 1992 and 1996 **What are the criteria for excluding observations?** Not specified **Final sample used**

	1533 firms for the period 1992 and 1996 **Effect of consistency of panel on methodology:** Not specified
Todo, Y. (2006). Knowledge spillovers from foreign direct investment in R&D: Evidence from Japanese firm-level data. *Journal of Asian Economics, 17*(6), 996-1013.	**What is the source of the data?** *Kigyo Katsudo Kihou Chosa* (Basic Survey of Enterprise Activities) Dataset has been collected annually by the Ministry of Economy, Trade and Industry, and Industry level data from the Japan Industry Productivity (JIP) Database 2006. **Data coverage** Covers all Japanese firms in manufacturing industries that employ 50 employees or more **How representative is the sample?** Not specified **Form of data** Firm level data for the period 1995-2002. Industry level data over the period 1970-2002 at the 3-digit industry level. **What are the criteria for excluding observations?** Sample limited to domestic firms. Only firms that had available data on TFP level and R&D expenditure for 6 consecutive years were used. Firms whose growth rate of TFP were among the top or bottom 1% and firms whose R&D expenditure were among the top 1% were dropped. **Final sample used** Sample consists of 21,404 observations **Effect of consistency of panel on methodology:** The study made use of firms with at least 6 consecutive years of data available.
Todo, Y., & Miyamoto, K. (2006). Knowledge Spillovers from Foreign Direct Investment and the Role of Local R&D Activities: Evidence from Indonesia. *Economic Development and Cultural Change, 55*, 173-200.	**What is the source of the data?** Annual plant-level surveys conducted by the central Bureau of Statistics of Indonesia **Data coverage** Covers all Indonesian manufacturing plants with 20 or more employees **How representative is the sample?** Not specified **Form of data** Panel data for the period 1994-1997 **What are the criteria for excluding observations?** Excluded 5,600 firms whose reported valued added, employment, or capital stock for any year was non-positive. Dropped 600 firms because the estimated value of capital stock was dubious Removed 100firms whose value added per efficiency unit of labour o capital stock in a year is more than 100 times or less than 0.01 **Final sample used** Removed all foreign firms and about 1,300 firms/ 12,146 observations whose TFP growth rate estimated by the Olley-Pake procedure falls outside 3 standard deviations from the average. One of the 4 years was excluded to achieve a balanced panel. However, while conducting robustness checks, the sample size was increased from 12,146 to 12, 690. The reason was to capture firms that exited the sample, in order to eliminate selection biases. **Effect of consistency of panel on methodology:** Used a balanced panel due to the requirements of the GMM technique used in the study
Yasar, M., & Morrison Paul, C. J. (2007). International linkages and productivity at the plant level: Foreign direct investment, exports, imports and licensing. *Journal of International Economics, 71*(2), 373-388.	**What is the source of the data?** Annual Survey of Manufacturing Industries compiled by Turkey's State Institute of Statistics **Data coverage** Covers manufacturing plants with greater than 25 employees **How representative is the sample?** The textile, wearing apparel, and the leather industry accounts for 35% of total manufacturing employment; 23% of wages; 20% of the output produced; 48% of Turkish exports The motor vehicle and parts accounts for 5% of total manufacturing employment, nearly 66% of wages, 10% of output, 5.2% of Turkish manufacturing exports. **Form of data** Unbalanced panel over the period, 1990-1996 **What are the criteria for excluding observations?** Removed observations with clearly erroneous values or missing data **Final sample used**

	1556 firms/7024 observations **Effect of consistency of panel on methodology:** Not mentioned
Fan, C. S., & Hu, Y. (2007). Foreign direct investment and indigenous technological efforts: Evidence from China. *Economics Letters, 96*(2), 253-258.	**What is the source of the data?** World Bank firm-level survey from 1998-2000 **Data coverage** Randomly selected manufacturing firms in five major cities over the period 1998-2000. **How representative is the sample?** Not specified **Form of data** Panel data of 998 Chinese firms over the period 1998-2000 **What are the criteria for excluding observations?** Not mentioned **Final sample used** 998 Chinese firms over the period 1998-2000 **Effect of consistency of panel on methodology:** Not mentioned
Yasar, M., & Paul, C. J. M. (2007). Firm performance and Foreign Direct Investment: Evidence from Transition Economies. *Economics Bulletin, 15*(21), 1-11.	**What is the source of the data?** "BEEPS II-Business Environment 2002" collected b the World Bank through the 2003 Investment Climate Survey of five Transition countries **Data coverage** Covers garment and food processing firms in Poland, Moldova, Tajikistan, Uzbekistan, and Kyrgyz Republic. A sample of 100 firms were drawn from each country **How representative is the sample?** Not specified. Referred to Bastos and Nasir (2004) for detailed explanation of data **Form of data** Cross-section for 2002 for 5 countries **What are the criteria for excluding observations?** Eliminated firms with missing variables especially for capital data **Final sample used** 437 firms were used. 76, 96, 88 99, and 78 for Poland, Moldova, Tajikistan, Uzbekistan, and Kyrgyz Republic respectively **Effect of consistency of panel on methodology:** Not applicable
Mullen, J. K., & Williams, M. (2007). Foreign Direct Investment and Regional Productivity Spillovers in Us Manufacturing. *Rurds, 19*(3), 185-196.	**What is the source of the data?** Two sources: U.S department of Commerce (Bureau of Economic Analysis) published establishment within the manufacturing sector. 1997 Economic Census, Manufacturing, Geographic Area series **Data coverage** Not specified **How representative is the sample?** Not specified **Form of data** 432 observations/48 state observations for the year 1997 **What are the criteria for excluding observations?** Missing data on key variables were eliminated **Final sample used** 312 observations for 1997 **Effect of consistency of panel on methodology:** Not applicable
Girma, S., & Wakelin, K. (2007). Local productivity spillovers from foreign direct investment in the U.K. electronics industry. *Regional Science and Urban Economics, 37*(3), 399-412.	**What is the source of the data?** Annual Business respondents Database (ARD) provided by the office of National Statistics (ONS) in the U.K. **Data coverage** Covers electrical and electronic sector. **How representative is the sample?** Not specified **Form of data** Unbalance panel over the period 1980-1992. Highly inconsistent panel **What are the criteria for excluding observations?** Excluded domestic establishments with zero output. Excluded establishments with observations at the top and bottom 1 percentile in terms

	of the capital/labour ratio, due to concerns over the size of the measurement errors. **Final sample used** Unbalanced panel of 2,773 establishments. **Effect of consistency of panel on methodology:** Not specified
Haskel, J. E., Pereira, S. C., & Slaughter, M. J. (2007). Does Inward Foreign Direct Investment Boost the Productivity of Domestic Firms? *Review of Economics and Statistics, 89*, 482-496.	**What is the source of the data?** Annual Census of Production Respondents Database (ARD), conducted by the U.K. office of National Statistics **Data coverage** Covers all plants with employment over a minimum size of 100 in most years. 50% of more plants with employment from 50 to 100. 25% of plants with employment from 20 to 50. **How representative is the sample?** Selected sample each year accounts for around 90% of total U.K. manufacturing employment. **Form of data** Unbalanced panel over the period 1973-1992. **What are the criteria for excluding observations?** Not specified **Final sample used** Unbalanced panel of 13,000-23,000 plants per year, over the period 1973-1992 **Effect of consistency of panel on methodology:** Noted that the general decline in the number of British plants could increase the foreign presence measures even if there were no changes in FDI activity. The authors pointed out that to control for the decline in domestic firms, the lagged number of British plants was added to the equation. Another solution noted by the study, was to enter the numerator and denominators of the spillover variable separately.
Kosteas, V. (2008). Foreign direct investment and productivity spillovers: a quantile analysis. *International Economic Journal, 22*(1), 25-41.	**What is the source of the data**? Mexico's National Institute of Statistics, Geography and Information (INEGI) **Data coverage:** Only large firms were included in the sample **How representative is the sample**? Represents 80% of output with small firms excluded **What are the criteria for excluding observations?** When output, capital stock, material inputs or labour is equal to zero. **Form of data**: Panel data (1984-1990). Panel data used to estimate total factor productivity (TFP) residuals, while 1990 cross section used to analyse production spillovers. **Final Sample used**: Contains 2,328 observations. 578 of them have some degree of foreign ownership **Effect of consistency of panel on methodology**: Not mentioned
Jordaan, J. A. (2008). Intra-industry and Inter-industry externalities from foreign direct investment in the Mexican manufacturing sector: New evidence from Mexican regions. *World Development*, 36(12), 2838-2854.	**What is the source of the data**? Unpublished data from the National Mexican manufacturing census carried out by INEGI. Contains data for 1993 **Data coverage:** Covers plant level observations aggregated at 6-digit industrial level for regions with significant manufacturing activity and FDI in 1993. **How representative is the sample**? Sample covers 65% of total manufacturing output and 85% of total FDI manufacturing employment. **What are the criteria for excluding observations?** Not mentioned **Form of data:** Not mentioned **Final Sample used:** Not mentioned **Effect of consistency of panel on methodology:** Not mentioned
Javorcik, B. S., & Spatareanu, M. (2008). To share or not to share: Does local participation matter for spillovers from foreign direct investment? *Journal of Development Economics, 85*(1-2), 194-217.	**What is the source of the data**? Data was sourced form the commercial database Amadeus. Supplemented with ownership data from the Romanian Chamber of Commerce and Industry **Data coverage:** Limited to firms with the average employment of more than 5 workers **How representative is the sample**? Not mentioned **What are the criteria for excluding observations?** Firms with negative vales for turnover, materials and fixed assets were dropped. Also firms reporting unusually large fluctuations were excluded. **Form of data:** Unbalanced panel (1998-2003), with observations ranging from 6,782 to 8,820

	Final Sample used: 13, 129 firms in 48 industries between 1998 and 2003 **Effect of consistency of panel on methodology:** Not mentioned
Liu, Z. (2008). Foreign direct investment and technology spillovers: Theory and evidence. *Journal of Development Economics, 85*(1-2), 176-193.	**What is the source of the data**? Sample of manufacturing firms obtained from the National Bureau of Statistics of China **Data coverage:** Covers over 20,000 industrial firms in China **How representative is the sample**? The sample represents one third of China's industrial output. Actual population of manufacturing firms in China in 1999 is 8 million. **What are the criteria for excluding observations?** Not mentioned **Final Sample used:** Sample of 17,675 manufacturing firms randomly selected from the database. **Form of data:** Unbalanced panel of 50,667 observations from 1995 to1999 **Effect of consistency of panel on methodology:** Not mentioned
Sembenelli, A., & Siotis, G. (2008). Foreign Direct Investment and mark-up dynamics: Evidence from Spanish firms. *Journal of International economics, 76*, 107-115.	**What is the source of the data?** From the data base, Central de Balances, collected by Bank of Spain **Data coverage** Covers all sectors of economic activity, except financial institutions **How representative is the sample?** Not specified **Form of data** Original data contains more than 91,009 firms over the period 1983-1996 **What are the criteria for excluding observations?** Removed from the sample: Non-manufacturing firms, manufacturing firms changing sector over the sample period, manufacturing sectors with less than 100 initial observations. Excluded observations with missing values for at least one of the variables of interest. Removed observations reporting non-positive values for variables like sales, number of employment, and net accounting physical capital. **Final sample used** 3,567 firms/29318 observations over 1983-1996. **Effect of consistency of panel on methodology:** Used firms with at least 4 consecutive observations
Girma, S., Gorg, H., & Pisu, M. (2008). Exporting, linkages and productivity spillovers from foreign direct investment. *Canadian Journal of Economics, 41*(1), 320-340.	**What is the source of the data?** Two sources: *OneSource* firm-level panel data for the U.K. U.K. Input-Output Supply and Use Tables. **Data coverage** All companies with 50 employees or more. All public limited companies. Only private companies that were in operation in 1999. **How representative is the sample?** Not specified **Form of data** Unbalanced panel over the period 1992-1999 **What are the criteria for excluding observations?** Not mentioned **Final sample used** Unbalance panel of 18,000 observations containing information on 4,600 firms, over the period 1992-1999 **Effect of consistency of panel on methodology:** Not specified
Chudnovsky, D., Lopez, A., & Rossi, G. (2008). Foreign Direct Investment Spillovers and the Absorptive Capabilities of Domestic Firms in the Argentine Manufacturing Sector (1992-2001). *Journal of Development Studies, 44*(5), 645-677.	**What is the source of the data?** National Statistical Institute of Argentina **Data coverage** Included the best performing firms and those with high probability of survival. Excluded firms that went bankrupt **How representative is the sample?** Inclusion and exclusion of firms from the sample was random. Sample represented 29% of sales; 27% of employment; and 24% of export over the period 1992-1996 **Form of data** Unbalanced panel over the period 1992-2001 **What are the criteria for excluding observations?** Excluded firms with less than 2 observations with positive values of the ratio between

	sales and employees. Also dropped firms that belong to sectors with very few firms. **Final sample used** 722 firms with detailed data for 1992, 1996, 1998, and 2000. **Effect of consistency of panel on methodology:** Not specified
Blalock, G., & Gertler, P. J. (2008). Welfare gains from Foreign Direct Investment through technology transfer to local suppliers. *Journal of International Economics, 74*, 402-421.	**What is the source of the data?** Annual survey of manufacturing establishments from the Republic of Indonesia's Budan Pusat Statistik (BPS), Central Bureau Statistics. Primary data is conducted by Biro Statistik Industri, the industrial Statistics Division of BPS. **Data coverage** Covers manufacturing establishment with 20 or more employees from 1975 onward. **How representative is the sample?** Not specified **Form of data** Unbalanced panel over the period 1988-1996 **What are the criteria for excluding observations?** Removed establishments with especially frequent non-responses to fundamental questions such as number of employees **Final sample used** Domestic firms: 8,888-14,912 Foreign firms: 276-888; over the period 1988-1996. **Effect of consistency of panel on methodology:** As result of missing data for some variables, the sample count varied across different regressions. The authors noted that details of data preparation are available on request from the authors.
Blake, A., Deng, Z., & Falvey, R. (2009). How does the productivity of foreign direct investment spill over to local firms in Chinese manufacturing? *Journal of Chinese Economic and Business Studies, 7*(2), 183-197.	**What is the source of the data?** Survey conducted by Asian Market intelligence **Data coverage** Randomly selected from 5 manufacturing sectors located in 5 super-sized cities in China **How representative is the sample?** Not mentioned **Form of data** Cross-section of manufacturing firms in 2000 **What are the criteria for excluding observations?** Not mentioned **Final sample used** 998 firms in 2000 **Effect of consistency of panel on methodology:** Not applicable – cross-sectional data used

Appendix 6.1

Table A1: Linking the ISIC code of CBN and ESDS

CBN 3-digit level category name	ISIC code	Category name (ESDS)	NMES category
Food products	1514	Vegetable and animal oils and fats	Food
	1520	Dairy products	
	1541	Bakery products	
	1543	Cocoa, chocolate and sugar confectionery	
Beverages	1552	Wines	
	1554	Soft drinks; mineral waters	
Textiles	1711	Textile fibre preparation; textile weaving	Textile
	1721	Made-up textile articles, except apparel	
	1723	Cordage, rope, twine and netting	
	1729	Other textiles, n.e.c.	
Footwear	1920	Footwear	
Rubber Products	2511	Rubber tyres and tubes	
	2519	Other rubber products	
Plastic Products	2520	Plastic products	
Wearing Apparel	1810	Wearing apparel, except fur apparel	Garment
Wood and Wood Products	2021	Veneer sheets, plywood, particleboard, etc.	Wood
	2022	Builders' carpentry and joinery	
Paper and Paper Products	2102	Corrugated paper and paperboard	Paper
	2109	Other articles of paper and paperboard	
Printing and Publishing	2211	Publishing of books and other publications	

	2212	Publishing of newspapers, journals, etc.	
	2221	Printing	
Other Chemical Products	2422	Paints, varnishes, printing ink and mastics	Chemical
	2423	Pharmaceuticals, medicinal chemicals, etc.	
	2424	Soap, cleaning & cosmetic preparations	
	2429	Other chemical products, n.e.c.	
Other Non-Metal Mineral Products	2695	Articles of concrete, cement and plaster	Metal
	2699	Other non-metallic mineral products, n.e.c.	
Metal Products (Fabricated)	2811	Structural metal products	
	2812	Tanks, reservoirs and containers of metal	
	2891	Metal forging/pressing/stamping/roll-forming	
	2899	Other fabricated metal products, n.e.c.	
Non-Electrical Machinery	2930	Domestic appliances, n.e.c.	Machines
Electrical-Machinery	3120	Electricity distribution & control apparatus	
	3190	Other electrical equipment, n.e.c.	
Professional & Scientific Equipment	3210	Electronic valves, tubes, etc.	
Transport Equipment	3410	Motor vehicles	
	3430	Parts/accessories for automobiles	

	3592	Bicycles and invalid carriages	
Furniture and Fixtures	3610	Furniture	Furniture

Appendix 6.2

Data preparation: NMES data

Data cleaning

Initial data cleaning involved the elimination of firm observations that are deemed unsuitable for statistical analysis. These basic criteria for elimination at this stage involved the removal of firms with persistent missing values for most relevant variables. Since our primary concern is to investigate the impact of foreign presence on firms (FDI spillovers), we delete firm observations which have missing values for variables that are possible candidates for construction of foreign presence variable. These variables are output, employment, and capital. Thus firms with missing values for all three variables are excluded at this stage. For 1998 and 1999 cross-sections, firms “20”,”85”, “1027”, “1035”, “1037”, “4006”,“5010”,“5016”,”6019”, “6022”, ”6073”, “6118”, “6119”, “6134”, “6158”, “6211”, “6224”, “6326”, “9005”, and ”99082”, were deleted from the dataset. Another firm was removed due to the said criteria had no firm identification. Thus the number of firms remaining after this initial cleaning for 1998 and 1999 cross-sections were 177 and 180 respectively. The same firms were excluded in 1998 and 1999 cross-sections were also removed for that of year 2000, except for 3 firms: “4010”, “6134”, and “6326”. These firms satisfied the conditions for inclusion in the year 2000 dataset. Thus the initial data cleaning for year 2000 cross-section brought the number of firm observations down to 184.

For cross-sections computed from the Wave 2 dataset (2001, 2002, and 2003), each of the firms met the criteria for inclusion, except for firm “40” of 2001dataset. Thus the number of firms for 2001 cross-section reduced to 121, while that of 2002 and 2003 remained the same.

Identification of ownership, sectors, and regions of firms across years

Since our empirical investigation involves the constructing measures of foreign presence within sectors and regions, a good starting point would be to identify the firms that are classified foreign; and also to identify the various sectors and regional classification present in the dataset. The NMEs dataset uses dummies to indicate foreign firms, sectors and regions. A careful look through these indicator variables across years show some degree of inconsistency, as some had missing values, and some indicators changed from one year to another. To substantially investigate this observation, we rearrange the original data set in manner that links each firm with its values across years. With this arrangement, changes that occur in a firm across years could be observed with more clarity.

We investigate the possibility that some firms changed ownership during the course of the survey. In particular, we look out for firms that change from either foreign to domestic, or domestic to foreign (Appendix 6.2). Such changes are important in this study because they affect the measure of foreign presence. In other words, when a firm changes from foreign to domestic, the direct implication of this change is that the foreign presence of the sector or region in the subsequent year would be reduces ceteris paribus. From the original dataset, we detect changes in foreign ownership indicators within four firms. Firm 4016 and 6053 ownership indicators changed from foreign in Wave1 to domestic in Wave2. We therefore acknowledge this change actual change of the firms from being foreign to domestic. This change has some important implications. For empirical analysis using pooled Wave1 dataset, the said firms would be considered as foreign firms, while in the case of Wave 2 pooled data, the firms would be considered domestic.

A similar change in ownership indicators occurred within two firms in Wave2. Firm “6190” changed from being foreign in year 2000 to domestic in year 2001, and back to foreign in year 2002.Firm “6199” changed from being foreign in year 2000 to domestic in years 2001 and 2002, and back to foreign in year 2003. These erratic changes in this case are considered as data errors rather than changes in foreign ownership. Thus as shown in Appendix 6.2, Table A2, we assume these firms to be foreign, since they were regarded foreign in their first three years (1998-200). Another irregularity in the ownership indicator is that some firms have no ownership indicators. Thus we consider those firms (2091, 2093, 2094, 6120, and 8020) as domestic firms.

As consistency in foreign ownership indicators have been confirmed, the next task is to ensure consistency in the sector and region indicators. A careful observation of both sector and region indicators show absolute consistency across indicators. But despite this consistency, some firms in the dataset have missing values for region indicators. Since the corresponding sector indicators of these firms are present, excluding these firms would affect the affect the measures of foreign presence within the sector. Thus we take a different approach by using the value "99"as region indicator value to denote firms with missing region indicators. Tale A2 and Table A3 shows the particular firm and year observations replaced.

Table A2: Identification of firms with ownership identification problems

Problem	Firms	Nature of problem						
Change of ownership indicator	4016, 6053, 6190, 6199		1998	1999	2000	2001	2002	20003
		4016	1	1	1	0	0	0
		6053	1	1	1	0	0	0
		6190	1	1	1	0	1	1
		6199	1	1	1	0	0	1
No foreign ownership indicator	2091, 2093, 2094, 6120, 8020	Missing values for ownership dummy						

Table A3: Treatment of firms with ownership identification problems

Problem	Firms	Remedy						
Change of ownership indicator	4016, 6053, 6190, 6199		1998	1999	2000	2001	2002	20003
		4016	1	1	1	0	0	0
		6053	1	1	1	0	0	0
		6190	1	1	1	1	1	1
		6199	1	1	1	1	1	1
No foreign ownership indicator	2091, 2093, 2094, 6120, 8020	Considered as domestic firms						

Construction of measures of foreign presence with sample data

A centre point of this data transformation is the construction of foreign presence variables which are intended to capture productivity spillovers. In accordance with literature we define this measure as the share of employment/output/capital of foreign firms in a sector or region. In this study, we investigate apply all three indices of capturing foreign presence in a sector or region. To achieve this, we designed syntaxes to construct these measures accurately. The syntax basically performs the following operation: First it orders all firms in a sector or region in ascending order of their respective indications. Thus "Food" sector with the indicator "1" precedes the "textile" sector with the indicator "2" in order. In a similar way, "Lagos" region with an indicator "1" precedes "Ibadan" with an indicator "2". The next operation involves summing employment/output/capital of all firms (domestic and foreign) in a sector or region. This is followed by the computation of this sum for only foreign firms in sector or region. The final stage computes the measure of foreign presence which is equal to the ratio of the sum computed for foreign firms to the sum computed for all firms in the sector or region. The ascending order arrangement aids the observation of the differences in foreign presence between sectors, regions, and years.

Further data transformation

In preparation for regression analysis, we undergo further data transformation in order to ensure that our results are not plagued by outliers, wrong data entry, missing values, inappropriate units of measurement. Close observation revealed that the variable that captured "value added" was not in logarithm like other variables used for production function specification. Thus we create a new variable, log of value added "lnvadd" which is simply the conversion of the variable present in the dataset to natural logarithms. This ensures the use of the appropriate functional form in regressions with value added as the dependent variable. But prior to computing this variable, we had to delete all firm observations with a negative value for two reasons: First is that it is not mathematically possible to compute the logarithm of a negative value. Secondly, it does not make economic sense to have negative values for value added, as the total indirect costs and raw materials should not exceed the total value output for a firm engaged in production. Thus we exclude observations with negative values for value added as they may distort the regression results.

Further transformations involved entry of appropriate sector and region indicators in cases where they were erroneously omitted, and the computation of two region dummies which appeared in the original command syntax but were absent in the final NMES dataset. Thus we compute two dummy variables "Lagos" "Ibadan" and "Kano" using the numerical indicators of "town" variable. We also make use of the sector and town indicators to provide values for the erroneous missing values for the dummies in the dataset.

Appendix 6.3: List of banks names

	Bank name	Frequency (year observations)	Frequency (banks)	Percentage of total banks	Percentage of observations
1	Bond Bank Limited	1	1	1.67	0.28
2	Access Bank Plc	2	8	13.33	4.49
3	Centre- Point Merchant Bank Plc	2			
4	First Inland Bank Plc	2			
5	Lion Bank of Nigeria Plc	2			
6	Magnum Trust Bank Plc	2			
7	New Africa Merchant Bank Plc	2			
8	Reliance Bank Ltd	2			
9	Trust Bank of Africa Ltd	2			
10	NNB International Bank Plc	3	3	5	2.53
11	Skye Bank Plc	3			
12	Société Bancaire Nigeria Ltd	3			
13	EIB International Bank Plc	4	4	6.67	4.49
14	First Interstate Bank Plc	4			
15	Regent Bank Plc	4			
16	Unity Bank Plc	4			
17	Bank PHB Plc	5	3	5	4.21
18	Gateway Bank Plc	5			
19	Indo-Nigerian Bank Ltd	5			
20	Bank of the North Limited	6	9	15	15.17
21	Broad Bank Nigeria Ltd	6			
22	Fidelity Bank Plc	6			
23	Inland Bank (Nig.) Plc	6			
24	NBM Bank	6			
25	NUB International Bank Ltd.	6			
26	Oceanic Bank International Plc	6			
27	Stanbic Bank Nigeria Limited	6			
28	Zenith Bank Plc	6			

29	Co-operative Bank Plc	7	11	18.33	21.63
30	DevCom Bank Limited	7			
31	Diamond Bank Plc	7			
32	Equity Bank of Nigeria Ltd	7			
33	First Bank of Nigeria Plc	7			
34	First City Monument Bank Plc	7			
35	Guaranty Trust Bank Plc	7			
36	Intercontinental Bank Plc	7			
37	Stanbic IBTC Bank Plc	7			
38	Tropical Commercial Bank Plc	7			
39	Union Bank of Nigeria Plc	7			
40	Afribank Nigeria Plc	8	21	35	47.19
41	Capital Bank International Limited	8			
42	Chartered Bank Plc	8			
43	Citibank	8			
44	Ecobank Nigeria	8			
45	Equitorial Trust Bank Limited	8			
46	FBN (Merchant Bankers) Limited	8			
47	First Atlantic Bank Limited (Merchant Bankers)	8			
48	FSB International Bank Plc	8			
49	Habib Nigeria Bank Limited	8			
50	IMB International Bank Plc	8			
51	Intercity Bank Plc	8			
52	Manny Bank Plc	8			
53	Marina International Bank Limited	8			
54	MBC International Bank Ltd	8			
55	Standard Chartered Bank Nigeria	8			
56	Standard Trust Bank Limited	8			
57	Sterling Bank Plc	8			
58	United Bank for Africa Plc	8			
59	Universal Trust Bank of Nigeria Limited	8			
60	Wema Bank Plc	8			
	Total	356	60	100	100.00

Appendix 7.1

Table A1: OLS results for all firms with MacroFP variable (1992-2009)

	(1) BTP	(2) NIM	(3) NII	(4) OV	(5) LLP
EQ	-0.00946	0.0790	-0.00527	-0.0145	0.0251
	(-0.32)	(0.92)	(-0.33)	(-0.83)	(0.95)
NEA	0.0180	0.148*	-0.0452*	0.138***	-0.0696
	(0.29)	(2.32)	(-2.03)	(3.80)	(-1.13)
CSTF	-0.0238	0.158*	-0.0347	0.0309	0.0474
	(-0.56)	(2.37)	(-1.75)	(1.53)	(1.50)
OV	-0.660*	0.358*	0.482***		0.489
	(-2.30)	(2.17)	(3.96)		(1.91)
MacroFP	0.196	-0.0651	0.0849*	-0.0921	-0.0984
	(1.81)	(-0.77)	(2.11)	(-1.84)	(-1.00)
TA	-0.00955	-0.00443	-0.000887	-0.00146	0.00535
	(-1.48)	(-1.32)	(-0.78)	(-1.05)	(0.97)
LN	0.0253	0.00907	0.000229	0.00206	-0.0196
	(1.05)	(0.98)	(0.07)	(0.43)	(-0.91)
GVT	0.00299	0.0404	-0.0148	-0.0133	-0.0121
	(0.16)	(1.22)	(-1.74)	(-1.01)	(-0.71)
CRI	-4.955	-0.577	-0.697	1.622*	4.766
	(-1.58)	(-0.52)	(-1.48)	(2.13)	(1.61)
CONC	-14.19	-11.09	30.14**	-15.32	38.75*
	(-0.72)	(-0.55)	(3.07)	(-1.30)	(2.46)
GCAP	-0.142	-0.0335	-0.00376	-0.00202	0.136*
	(-1.95)	(-1.06)	(-0.29)	(-0.09)	(1.99)
INF	-0.0537	-0.0807	0.0962**	0.0258	0.102**
	(-1.35)	(-1.72)	(2.87)	(0.82)	(2.99)
R	0.0723*	0.0781*	0.00254	0.0245	-0.0607*
	(2.15)	(2.07)	(0.14)	(1.09)	(-2.31)
CRR	-0.621	-0.265	0.299	-0.0505	0.898**
	(-1.54)	(-0.72)	(1.91)	(-0.21)	(2.66)
Constant	76.09*	15.83	-11.11	12.86	-83.91*
	(2.02)	(0.70)	(-1.29)	(0.95)	(-2.43)
N	325	325	325	325	322
R^2	0.2668	0.4316	0.4229	0.3520	0.2426
Ramsey Test	0.0000	0.0000	0.0136	0.0320	0.0000

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

Table A2: OLS results for all firms with MicroFP variable (1992-2009)

	(1) BTP	(2) NIM	(3) NII	(4) OV	(5) LLP
EQ	-0.00548	0.0885	-0.00363	-0.0223	0.0233
	(-0.17)	(1.02)	(-0.23)	(-1.24)	(0.80)
NEA	0.0155	0.146*	-0.0467*	0.121***	-0.0717
	(0.24)	(2.25)	(-2.14)	(3.87)	(-1.16)
CSTF	-0.0151	0.173*	-0.0385	0.0213	0.0409
	(-0.32)	(2.38)	(-1.82)	(1.00)	(1.12)
OV	-0.686*	0.347	0.573***		0.541
	(-2.02)	(1.79)	(5.28)		(1.80)
MicroFP	0.0152	0.0257	-0.00595	-0.00872	-0.0114
	(1.05)	(1.64)	(-1.18)	(-1.27)	(-0.92)
TA	-0.00784	-0.00477	0.0000539	-0.00244	0.00457
	(-1.36)	(-1.51)	(0.05)	(-1.80)	(0.95)
LN	0.0219	0.0122	-0.00223	0.00326	-0.0182
	(0.97)	(1.39)	(-0.70)	(0.68)	(-0.91)
GVT	0.00631	0.0452	-0.0187*	-0.00805	-0.0150
	(0.30)	(1.33)	(-2.18)	(-0.67)	(-0.80)
CRI	-4.514	-0.926	-0.582	1.494*	4.512
	(-1.57)	(-0.82)	(-1.21)	(2.02)	(1.66)
CONC	-9.934	-8.963	28.30**	-11.17	35.39*
	(-0.50)	(-0.43)	(2.99)	(-1.09)	(2.23)
GCAP	-0.111	-0.0534	0.00666	-0.00143	0.119*
	(-1.90)	(-1.55)	(0.66)	(-0.08)	(2.16)
INF	-0.0518	-0.0725	0.0804**	0.0428	0.0948**
	(-1.27)	(-1.51)	(2.70)	(1.63)	(2.81)
R	0.0549	0.0832*	-0.00216	0.0234	-0.0512*
	(1.74)	(2.09)	(-0.11)	(1.09)	(-2.17)
CRR	-0.505	-0.299	0.252	0.0751	0.802*
	(-1.32)	(-0.75)	(1.95)	(0.42)	(2.57)
Constant	64.74	19.95	-12.20	8.642	-76.82*
	(1.95)	(0.84)	(-1.60)	(0.82)	(-2.56)
N	324	324	324	324	321
R^2	0.2581	0.4252	0.4697	0.3635	0.2464
Ramsey Test	0.0000	0.0000	0.0071	0.1134	0.0000

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

Table A3: OLS results for all firms with ΔMacroFP variable – first differences (1992-2009)

	(1) ΔBTP	(2) ΔNIM	(3) ΔNII	(4) ΔOV	(5) ΔLLP
ΔEQ	0.0412	0.0757***	-0.00176	-0.00663	-0.00305
	(0.67)	(3.67)	(-0.13)	(-0.29)	(-0.07)
ΔNEA	0.127	0.143	-0.0358	0.139*	-0.158
	(1.45)	(1.93)	(-1.67)	(2.46)	(-1.96)
ΔCSTF	-0.0569	-0.0115	-0.00341	0.0223	0.0718
	(-1.12)	(-0.31)	(-0.24)	(0.66)	(1.69)
ΔOV	-0.904*	0.362	0.384***		0.690*
	(-2.32)	(1.93)	(5.30)		(1.99)
ΔMacroFP	0.222*	0.00337	0.0280	0.0610	-0.177*
	(2.27)	(0.07)	(0.92)	(1.54)	(-2.19)
ΔTA	0.00959	0.00164	-0.000713	-0.00394*	-0.0106
	(1.41)	(0.75)	(-0.78)	(-1.99)	(-1.83)
ΔLN	0.00509	0.000898	-0.000626	0.00253	-0.00282
	(0.31)	(0.23)	(-0.34)	(0.70)	(-0.20)
CRI	2.787	0.781	-0.618	2.650**	-3.032
	(1.30)	(0.72)	(-1.11)	(2.83)	(-1.80)
ΔCONC	-8.357	-5.417	0.531	-5.685	7.443
	(-0.70)	(-0.73)	(0.11)	(-1.12)	(0.84)
ΔGCAP	0.0805	-0.00662	-0.0306	0.0880*	-0.131
	(0.98)	(-0.13)	(-1.25)	(2.35)	(-1.92)
ΔINF	-0.0382	-0.0512	0.0677*	0.0623*	0.0663**
	(-1.16)	(-1.89)	(2.22)	(2.06)	(2.65)
ΔR	-0.0167	0.00900	0.0180	-0.0116	0.0301
	(-0.67)	(0.48)	(1.83)	(-0.75)	(1.49)
ΔCRR	-0.488*	-0.150	-0.0530	-0.123	0.280
	(-2.28)	(-1.12)	(-0.58)	(-0.97)	(1.78)
Constant	-3.389	-0.502	0.700	-2.756**	4.033*
	(-1.44)	(-0.40)	(1.09)	(-2.61)	(2.18)
N	280	280	280	280	278
R^2	0.2986	0.2595	0.3035	0.2572	0.2828
Ramsey Test	0.0000	0.0000	0.9005	0.0000	0.0000

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

Table A4: OLS results for all firms with ΔMicroFP variable – first differences (1992-2009)

	(1) ΔBTP	(2) ΔNIM	(3) ΔNII	(4) ΔOV	(5) ΔLLP
ΔEQ	0.0357	0.0768***	-0.00173	-0.00937	0.000248
	(0.59)	(3.59)	(-0.13)	(-0.43)	(0.01)
ΔNEA	0.108	0.139	-0.0419	0.137*	-0.142
	(1.24)	(1.91)	(-1.95)	(2.39)	(-1.77)
ΔCSTF	-0.0614	-0.00953	-0.00231	0.0200	0.0755
	(-1.21)	(-0.25)	(-0.16)	(0.61)	(1.75)
ΔOV	-0.884*	0.374	0.396***		0.664
	(-2.26)	(1.97)	(5.47)		(1.91)
ΔMicroFP	-0.0316	-0.0202	-0.0134	-0.0145	0.00759
	(-1.08)	(-1.84)	(-1.58)	(-0.72)	(0.33)
ΔTA	0.00709	0.00154	-0.00106	-0.00475*	-0.00885
	(1.12)	(0.73)	(-1.12)	(-2.52)	(-1.64)
ΔLN	0.00629	0.00104	-0.000408	0.00298	-0.00350
	(0.38)	(0.27)	(-0.22)	(0.84)	(-0.25)
CRI	0.316	0.561	-1.030	1.908*	-1.225
	(0.18)	(0.67)	(-1.83)	(2.39)	(-0.91)
ΔCONC	-13.48	-7.883	-1.021	-5.793	11.93
	(-0.96)	(-0.94)	(-0.18)	(-0.93)	(1.18)
ΔGCAP	0.0138	-0.00719	-0.0376	0.0648	-0.0817
	(0.19)	(-0.16)	(-1.51)	(1.90)	(-1.36)
ΔINF	-0.0407	-0.0543*	0.0654*	0.0633*	0.0691**
	(-1.23)	(-2.00)	(2.16)	(2.13)	(2.79)
ΔR	-0.00360	0.00918	0.0194*	-0.00616	0.0213
	(-0.15)	(0.52)	(2.05)	(-0.39)	(1.15)
ΔCRR	-0.287	-0.114	-0.0100	-0.0749	0.130
	(-1.42)	(-0.87)	(-0.12)	(-0.62)	(0.92)
Constant	-0.877	-0.386	1.053	-1.925*	2.214
	(-0.47)	(-0.38)	(1.65)	(-2.16)	(1.55)
N	275	275	275	275	273
R^2	0.2900	0.2690	0.3191	0.2593	0.2727
Ramsey Test	0.0000	0.0000	0.9725	0.0000	0.0000

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All estimates have robust standard errors

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Table A5: Fixed effects results for all firms with MacroFP variable (1992-2009)

	(1) BTP	(2) NIM	(3) NII	(4) OV	(5) LLP
EQ	0.0391	0.0352	0.0104	0.00168	-0.000620
	(0.96)	(1.31)	(0.73)	(0.08)	(-0.02)
NEA	0.0400	0.178***	-0.0767**	0.204***	-0.121*
	(0.59)	(3.97)	(-3.23)	(6.55)	(-2.08)
CSTF	0.0210	0.0724*	0.0138	0.0415	0.0398
	(0.46)	(2.42)	(0.87)	(1.86)	(1.04)
OV	-0.749***	0.363***	0.365***		0.517***
	(-5.90)	(4.33)	(8.22)		(4.83)
MacroFP	0.157	-0.0430	0.0770	-0.104	-0.0760
	(1.27)	(-0.53)	(1.78)	(-1.71)	(-0.73)
TA	-0.00548	-0.000847	-0.00253	-0.000365	0.00119
	(-1.03)	(-0.24)	(-1.36)	(-0.14)	(0.27)
LN	0.0204	0.00281	0.00498	-0.00188	-0.0146
	(1.42)	(0.30)	(0.99)	(-0.27)	(-1.19)
GVT	0.102	0.319***	-0.0372*	0.00794	-0.0498
	(1.95)	(9.21)	(-2.03)	(0.30)	(-1.13)
CRI	-4.782***	-0.131	-0.974*	1.783*	4.571***
	(-3.39)	(-0.14)	(-1.98)	(2.58)	(3.70)
CONC	-21.98	-17.43	23.73***	-19.49	40.19*
	(-1.09)	(-1.31)	(3.37)	(-1.96)	(2.37)
GCAP	-0.170***	-0.0284	-0.0124	0.0204	0.161***
	(-4.28)	(-1.09)	(-0.90)	(1.04)	(4.63)
INF	-0.0692	-0.0739*	0.0798***	0.0132	0.104**
	(-1.45)	(-2.35)	(4.79)	(0.56)	(2.60)
R	0.0740	0.0559*	0.0149	0.0227	-0.0530
	(1.95)	(2.24)	(1.13)	(1.21)	(-1.66)
CRR	-0.892*	-0.283	0.243	-0.0389	1.086***
	(-2.44)	(-1.17)	(1.90)	(-0.21)	(3.52)
Constant	89.24***	20.29	-6.043	4.032	-94.15***
	(4.11)	(1.42)	(-0.80)	(0.37)	(-5.04)
N	325	325	325	325	322
R^2	0.1916	0.2912	0.3555	0.2718	0.2085
Rho	0.3286	0.7376	0.5895	0.4539	0.2541

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A6: Fixed effects results for all firms with MicroFP variable (1992-2009)

	(1) BTP	(2) NIM	(3) NII	(4) OV	(5) LLP
EQ	0.0363	0.0354	0.0101	-0.00243	-0.000764
	(0.88)	(1.31)	(0.72)	(-0.13)	(-0.02)
NEA	0.0383	0.178***	-0.0765**	0.169***	-0.121*
	(0.56)	(3.97)	(-3.27)	(5.84)	(-2.07)
CSTF	0.0207	0.0731*	0.00937	0.0419*	0.0379
	(0.45)	(2.43)	(0.60)	(2.05)	(0.99)
OV	-0.809***	0.361***	0.424***		0.559***
	(-5.79)	(3.93)	(8.87)		(4.77)
MicroFP	0.00408	-0.00191	-0.0112	-0.00295	-0.0204
	(0.12)	(-0.08)	(-0.94)	(-0.19)	(-0.70)
TA	-0.00408	-0.00131	-0.00161	-0.00187	0.000371
	(-0.78)	(-0.38)	(-0.91)	(-0.80)	(0.08)
LN	0.0165	0.00391	0.00312	0.000845	-0.0123
	(1.17)	(0.42)	(0.65)	(0.13)	(-1.03)
GVT	0.107*	0.318***	-0.0397*	0.0128	-0.0540
	(2.03)	(9.16)	(-2.19)	(0.53)	(-1.22)
CRI	-4.291**	-0.237	-0.865	1.523*	4.294***
	(-3.11)	(-0.26)	(-1.83)	(2.47)	(3.57)
CONC	-20.65	-17.54	23.23***	-14.36	39.37*
	(-1.02)	(-1.32)	(3.35)	(-1.57)	(2.32)
GCAP	-0.140***	-0.0350	-0.00361	0.0162	0.146***
	(-4.09)	(-1.56)	(-0.31)	(1.05)	(4.89)
INF	-0.0683	-0.0723*	0.0711***	0.0307	0.102*
	(-1.42)	(-2.28)	(4.31)	(1.42)	(2.53)
R	0.0616	0.0591*	0.00998	0.0242	-0.0463
	(1.67)	(2.44)	(0.79)	(1.46)	(-1.50)
CRR	-0.788*	-0.295	0.230	0.0769	1.037***
	(-2.15)	(-1.22)	(1.83)	(0.46)	(3.36)
Constant	79.88***	22.10	-7.331	0.645	-89.11***
	(3.79)	(1.59)	(-1.02)	(0.07)	(-4.94)
N	324	324	324	324	321
R^2	0.1801	0.2835	0.3931	0.2847	0.2137
Rho	0.3340	0.7374	0.5789	0.4672	.2547

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A7: Fixed effects results for all firms with ΔMacroFP variable – first differences (1992-2009)

	(1) ΔBTP	(2) ΔNIM	(3) ΔNII	(4) ΔOV	(5) ΔLLP
ΔEQ	0.257***	0.0350	0.0368	-0.0297	-0.134**
	(4.34)	(1.00)	(1.72)	(-1.15)	(-2.75)
ΔNEA	0.120	0.146***	-0.0369	0.126***	-0.142**
	(1.82)	(3.74)	(-1.55)	(4.58)	(-2.60)
ΔCSTF	-0.0578	-0.00534	-0.00876	-0.00903	0.0754
	(-1.24)	(-0.19)	(-0.52)	(-0.44)	(1.97)
ΔOV	-0.917***	0.417***	0.401***		0.782***
	(-5.84)	(4.47)	(7.05)		(6.05)
ΔMacroFP	0.261*	0.00150	0.0253	0.0640	-0.225*
	(2.20)	(0.02)	(0.59)	(1.23)	(-2.30)
ΔTA	0.0126*	0.00346	-0.000674	-0.00429	-0.0128**
	(2.18)	(1.01)	(-0.32)	(-1.70)	(-2.68)
ΔLN	-0.00580	-0.000408	-0.00214	0.00159	0.00307
	(-0.42)	(-0.05)	(-0.43)	(0.26)	(0.27)
CRI	2.688	1.028	-0.892	2.846**	-3.259
	(1.07)	(0.69)	(-0.98)	(2.61)	(-1.57)
ΔCONC	-28.62*	-2.630	-2.955	-2.904	19.13
	(-2.35)	(-0.36)	(-0.67)	(-0.54)	(1.90)
ΔGCAP	0.100	-0.0141	-0.0263	0.0924*	-0.158*
	(1.08)	(-0.26)	(-0.78)	(2.28)	(-2.05)
ΔINF	-0.0356	-0.0671*	0.0699***	0.0512*	0.0566
	(-0.74)	(-2.36)	(4.02)	(2.46)	(1.44)
ΔR	-0.0139	0.00792	0.0205	-0.0259	0.0310
	(-0.44)	(0.43)	(1.80)	(-1.89)	(1.19)
ΔCRR	-0.524*	-0.124	-0.0472	-0.108	0.383
	(-2.07)	(-0.82)	(-0.52)	(-0.98)	(1.84)
Constant	-4.611	-0.603	0.775	-2.645*	5.440*
	(-1.75)	(-0.39)	(0.81)	(-2.31)	(2.51)
N	280	280	280	280	278
R^2	0.1935	0.2018	0.2257	0.2204	0.1848
Rho	0.7653	0.3524	0.5149	0.4957	0.6912

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A8: Fixed effects results for all firms with ΔMicroFP variable – first differences (1992-2009)

	(1) ΔBTP	(2) ΔNIM	(3) ΔNII	(4) ΔOV	(5) ΔLLP
ΔEQ	0.258***	0.0395	0.0396	-0.0325	-0.135**
	(4.30)	(1.14)	(1.86)	(-1.24)	(-2.73)
ΔNEA	0.0856	0.139***	-0.0442	0.124***	-0.113*
	(1.29)	(3.63)	(-1.87)	(4.46)	(-2.05)
ΔCSTF	-0.0582	0.00410	-0.00604	-0.0114	0.0774
	(-1.22)	(0.15)	(-0.36)	(-0.55)	(1.97)
ΔOV	-0.867***	0.438***	0.415***		0.742***
	(-5.45)	(4.75)	(7.32)		(5.67)
ΔMicroFP	-0.0252	-0.0312	-0.0102	0.00952	-0.00118
	(-0.80)	(-1.71)	(-0.91)	(0.69)	(-0.05)
ΔTA	0.0102	0.00335	-0.000873	-0.00491	-0.0108*
	(1.78)	(1.01)	(-0.43)	(-1.97)	(-2.30)
ΔLN	-0.00603	0.0000930	-0.00222	0.00168	0.00357
	(-0.43)	(0.01)	(-0.44)	(0.27)	(0.31)
CRI	0.0427	0.691	-1.201	2.304*	-1.199
	(0.02)	(0.52)	(-1.48)	(2.34)	(-0.64)
ΔCONC	-36.73**	-5.727	-5.534	-1.877	24.80*
	(-2.78)	(-0.75)	(-1.18)	(-0.32)	(2.26)
ΔGCAP	0.0289	-0.0118	-0.0305	0.0726	-0.102
	(0.33)	(-0.23)	(-0.97)	(1.90)	(-1.40)
ΔINF	-0.0378	-0.0679*	0.0693***	0.0509*	0.0589
	(-0.78)	(-2.41)	(4.01)	(2.42)	(1.47)
ΔR	-0.000667	0.00903	0.0210	-0.0226	0.0225
	(-0.02)	(0.50)	(1.88)	(-1.65)	(0.87)
ΔCRR	-0.266	-0.0747	-0.00259	-0.0761	0.182
	(-1.09)	(-0.53)	(-0.03)	(-0.71)	(0.90)
Constant	-1.830	-0.444	1.031	-1.955	3.252
	(-0.79)	(-0.33)	(1.25)	(-1.93)	(1.69)
N	275	275	275	275	273
R^2	0.1871	0.2082	0.2356	0.2102	0.1782
Rho	0.7683	0.3820	0.5332	0.5097	0.6966

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A9: Fixed effects results for domestic firms with ΔMacroFP variable – first differences (1992-2009)

	(1) ΔBTP	(2) ΔNIM	(3) ΔNII	(4) ΔOV	(5) ΔLLP
ΔEQ	0.259**	0.0639	0.0234	0.00678	-0.126
	(2.85)	(1.02)	(0.73)	(0.15)	(-1.64)
ΔNEA	0.163	0.188**	-0.0482	0.173***	-0.234**
	(1.72)	(2.88)	(-1.44)	(3.99)	(-2.92)
ΔCSTF	-0.0729	0.00840	-0.00883	0.00616	0.111*
	(-1.19)	(0.20)	(-0.41)	(0.21)	(2.13)
ΔOV	-0.652***	0.530***	0.406***		0.595***
	(-3.49)	(4.13)	(6.17)		(3.77)
ΔMacroFP	0.110	0.000102	0.0617	0.0653	-0.0315
	(0.67)	(0.00)	(1.06)	(0.81)	(-0.23)
ΔTA	0.0144*	0.00314	-0.0000205	-0.00519	-0.0129*
	(1.98)	(0.63)	(-0.01)	(-1.48)	(-2.10)
ΔLN	0.000144	0.00366	-0.00446	-0.000791	-0.00749
	(0.01)	(0.30)	(-0.72)	(-0.09)	(-0.50)
CRI	1.908	0.504	-0.311	2.243	-0.830
	(0.53)	(0.20)	(-0.25)	(1.30)	(-0.27)
ΔCONC	-29.50	-10.60	23.93*	6.080	54.61*
	(-1.03)	(-0.54)	(2.36)	(0.43)	(2.25)
ΔGCAP	0.125	-0.00381	0.00116	0.0913	-0.0904
	(0.98)	(-0.04)	(0.03)	(1.47)	(-0.83)
ΔINF	-0.0609	-0.0545	0.0580**	0.0513	0.0817
	(-1.06)	(-1.37)	(2.85)	(1.85)	(1.68)
ΔR	-0.0239	0.00289	0.0265	-0.0243	0.0253
	(-0.60)	(0.11)	(1.89)	(-1.26)	(0.75)
ΔCRR	-0.0378	0.112	-0.116	-0.168	-0.0116
	(-0.11)	(0.48)	(-0.97)	(-1.03)	(-0.04)
Constant	-4.476	-0.499	0.529	-2.194	3.739
	(-1.20)	(-0.19)	(0.40)	(-1.22)	(1.19)
N	180	180	180	180	180
R^2	0.1561	0.2334	0.3034	0.2421	0.1799
Rho	0.8148	0.3351	0.4711	0.5206	0.7527

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TableA10: Fixed effects results for domestic firms with ΔMacroFPS variable – first differences (1992-2009)

	(1) ΔBTP	(2) ΔNIM	(3) ΔNII	(4) ΔOV	(5) ΔLLP
ΔEQ	0.252**	0.0595	0.0231	0.0148	-0.122
	(2.77)	(0.95)	(0.72)	(0.35)	(-1.58)
ΔNEA	0.146	0.172*	-0.0455	0.196***	-0.221**
	(1.48)	(2.55)	(-1.31)	(4.60)	(-2.66)
ΔCSTF	-0.0771	0.00162	-0.00583	0.0223	0.115*
	(-1.24)	(0.04)	(-0.26)	(0.76)	(2.19)
ΔOV	-0.612**	0.562***	0.403***		0.568***
	(-3.17)	(4.24)	(5.89)		(3.48)
ΔMacroFPS	-5.904	-6.244	1.624	14.11**	4.870
	(-0.58)	(-0.90)	(0.45)	(3.08)	(0.57)
ΔTA	0.0127	0.00286	-0.000761	-0.00500	-0.0123*
	(1.83)	(0.60)	(-0.31)	(-1.55)	(-2.09)
ΔLN	0.00242	0.00376	-0.00326	0.000251	-0.00819
	(0.14)	(0.32)	(-0.53)	(0.03)	(-0.56)
CRI	-0.0500	-0.398	-0.696	3.515*	0.189
	(-0.01)	(-0.17)	(-0.56)	(2.19)	(0.06)
ΔCONC	-42.23	-21.19	25.17*	28.11	63.65*
	(-1.27)	(-0.93)	(2.14)	(1.82)	(2.27)
ΔGCAP	0.0574	-0.0397	-0.00860	0.147*	-0.0527
	(0.44)	(-0.44)	(-0.19)	(2.44)	(-0.47)
ΔINF	-0.0768	-0.0711	0.0622**	0.0852**	0.0947
	(-1.21)	(-1.63)	(2.76)	(2.95)	(1.76)
ΔR	-0.00558	0.0173	0.0254	-0.0526*	0.0128
	(-0.12)	(0.55)	(1.57)	(-2.52)	(0.33)
ΔCRR	-0.0281	0.0354	-0.0499	0.0615	0.0247
	(-0.08)	(0.15)	(-0.42)	(0.39)	(0.09)
Constant	-2.289	0.569	0.912	-3.803*	2.571
	(-0.62)	(0.22)	(0.70)	(-2.23)	(0.82)
N	180	180	180	180	180
R^2	0.1560	0.2391	0.3052	0.3028	0.1814
Rho	0.8118	0.3360	0.4574	0.5051	0.7514

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$